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Prince Bismarck's Scheme for the Insurance of Workmen against Accident.

IN the present day, when so wide and universal an interest is taken in the great social questions which in past times occupied solely the attention of a few thoughtful and foreseeing minds,—at a moment, too, when the question of the share of the liability that is incumbent on employers of labour is far from having been settled in the minds, not alone of those directly interested, but of all seriously inclined persons,—the recent proposal of a system of State insurance for workmen which Prince Bismarck has presented to the German Federal Council is worthy of some attention. It is true that to those who know how to read between the lines it is not difficult to see, in this step of the Chancellor, little more than a detail of the political scheme with which he endeavours to regulate the Empire. As such, it is not from the German press, managed as it is with military precision, and prompted alone from headquarters, that we can expect any opinion worthy of study, except from a political point of view, of the recent measure of the Chancellor, but the project, such as it stands, merits attention. It is to be the first subject of consideration of the new and well-organised Economic Council which Prince Bismarck has instituted, and which, composed solely of representants of the great industrial and agricultural interests of the community,* will, it is expected, arrive at some practical conclusions on the methods by which the commercial and agricultural interests of the country,—at present in such a suffering condition,—can be improved.

According to the new scheme, which contains no fewer than forty-seven articles, every workman or *employé* gaining less than 2,000 marks,—100*l.* a year,—occupied in mining pursuits, salt-mines, &c., dockyards, factories, and all establishments in which steam, gas, water, or hot-air is used,—though *employés* in the railroad companies and the marine are excluded from this category,—will be insured against the consequences of accident. A special department of the Government, with its headquarters at Berlin, and having agencies throughout Germany, will be entrusted with the management of this insurance, the chief aim of which is to alleviate all incapacity for work extending beyond a month. In case of serious injuries, the expense of medical treatment from the fifth week is to be paid, and, in addition, a compensation during the period of incapacity, if total, amounting to 66 per cent. of the yearly salary, reckoned at three hundred times the daily pay; in case of partial incapacity at a minimum of 25 per cent., at a maximum of 50 per cent. In case of death, when occurring a month at the utmost after the accident, 1-10th per cent. of the salary is to be allowed for funeral expenses, as also a sum amounting to 66 per cent. of the salary, together with a pension to the family, 10 per cent. of the husband's salary to the widow, and 10 per cent. to each child up to the age of 15. In the case of those workmen whose annual salary is 750 marks (37*l.*), or below, the premium,—the tariff of which has not yet been fixed,—will be paid, two-thirds by the head of the establishment, and one-third by the parish or local charity board. In those cases in which the salary is above 750 marks (37*l.*), the premium will be provided, half by the master and half by the person insured, the master being authorised to hold back out of the pay this latter sum.*

Such, we believe, may be considered to be the chief clauses of the new project, one eminently indicative, it will be seen, of Prince Bismarck's belief in the necessity of a permanent intervention of the State in the difficulties, or rather relations, which exist between masters and men, and which the *Nord Deutsche Allgemeine Zeitung*,—the chancellor's official and militant organ,—lately stated as the chief means by which the Government expects to combat the advance of Socialism. Into this political side of the question we are not called upon to enter, important as are its bearings on the liberty of private enterprise; but, as an illustration of Prince Bismarck's theory, it would be somewhat difficult to imagine, we think, a more amusing instance than the proposition seriously put forward not long since by a professor of the Berlin University that the houses in every city should be expropriated and made municipal property, their rents to be placed among the rates or taxes.

The scheme of the German Government, as we have previously remarked, is worthy of attention at home; not that it is likely that our rulers will agree, at least at present, in considering as necessary the intervention of the State in the relations between masters and men, and this from the fear, always before English legislators, of interfering with individual effort; but, while this important point must never be lost sight of, it cannot fail to be apparent to every reasoning mind that the Government can and ought in every way in its power to lend its aid to all measures of a nature to ameliorate the present far from satisfactory condition, and to insure the future welfare, of our enormous working classes. From this point of view, the recent step of the German Government is worthy of praise; but it possesses many features, apart from its political tendencies, which are not alone deficient, but eminently unjust. In the first place, it will be seen that the project of insurance is limited solely to certain branches of industry,—a manifest injustice; the Government steps in to protect these special industries by a tax which will fall upon the whole mass. What, again, the masters will say of their obligation to contribute from one-half to two-thirds of the premiums is not known.

To all who have devoted any thought to the question of the relations of masters and men it must at a glance appear that in the recent law proposed by the German Chancellor one great feature is absent. The Government having taken upon itself the consideration of the welfare of the workman, it has overlooked that greatest necessity of all, the guarantee of an honourable repose, a sure future for the old age of all who have devoted their lives to labour; the case of accident foreseen by the German Chancellor is, after all, fortunately but a rare occurrence, while old age and incapacity for work is a grim outlook present to every toiler.

What has been very justly termed the existing "chaotic period of industry" cannot be destined to last very long, and, under new conditions, new regulations will be absolutely necessary. On the varied and innumerable applications of insurance, now only in the first stages of its existence as a social institution, the new school of political economists base their hopes of the settlement in the future of many of the present evils in the relations between capital and labour. Poverty, want of work, incapacity for labour from accident, from old age, or other causes, the future of the bereaved family, and all the numerous anxieties of the worker's life, can, by a proper development of insurance, be if not abolished from the face of the earth, at least alleviated; nor is it going too far when the prospect is held out that, under such a system, vice itself, which, whatever cynics may say, is on the decrease, may be slowly yet efficaciously repressed.

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* As Prince Bismarck remarked, only a few days since, in opening the Council, the industrial and agricultural (the most important) interests of the country were necessarily ill-represented in Parliament, from the reason of the impossibility of great employers of labour being able to give up their time. In the new Council the members of each Commission can nominate their substitute, and thus not spend more than the time at their disposal in the conduct of the business of the Council, whose labours its president wisely foresees will greatly abridge the loss of time in the usual preliminary discussions of the Commissions and in the debates in the Parliament.

* Every five years, the law is to receive fresh consideration, and changes are to be made where required.

ROYAL ACADEMY LECTURES ON ARCHITECTURE, 1881.*

BY PROFESSOR G. E. STREET, R.A.

The Study and Practice of the Art.

It is impossible for a professor who enters on his duties under such circumstances as have involved my appointment to this office, not to say at least a few words of somewhat personal character. Three of my brethren who, in succession, occupied this chair within my time, have all been taken away from us within a brief period. One of them was the master under whom I had studied, and to whose varied information, skill, and enthusiasm for his art I shall always feel myself a great debtor. But the last was one to whom many of you students who are here to-night are similarly indebted. Mr. Barry had, as many of you are aware, held the post of professor in this Academy for some six or seven years. His lectures were marked by the variety of the subjects which they embraced, and by the judicial impartiality which it was his aim to show in his appreciation of what was, in his eyes, good in all styles. The sad event which closed his career so suddenly interrupted last year's lectures, when their delivery was but half completed. But they are shortly to be published, and will, I doubt not, be well worthy of your study and attention, as containing the advice, criticisms, and views upon our art of one who held a most distinguished place among his brethren. This is not the place or the time to say more on such a subject. But less than this I cannot say on an occasion when all of us would have been so glad that it should still have been his voice to which you listened, and his counsel that you had to accept. There is one difficulty which all professors must feel in the work which is to be done here. It is, as I think, our first duty to think of our students and their good. And in successive years it might be necessary, or, to say the least, advantageous, if the simple truths and precepts which are the foundation of all that is best in art were repeated time after time to the succeeding audiences of fresh students. And so, perhaps, it may matter little if sometimes I repeat what has been far better said before, in hopes that to some at least there may be freshness, instruction, and novelty in what I say. The real difficulty is that a professor who wishes to teach well must, of necessity, inculcate only what he himself believes to be true; and that in dealing with art, as soon as he leaves the domain of simple first principles, he comes upon ground where every view is contested, and each man's art is, to a great extent, independent of his neighbour's. And my hope is that in listening to me you will none of you forget that, after all, what I tell you is intended to be suggestive first of all. If I tell you of first principles which all acknowledge, and then give you advice which seems to sin against them, you may be sure I have not made myself understood, and in any case it is the first principle which must be held fast by. To-night, however, I shall have to confine myself very much to questions which much concern those of you more especially who are students in our Architectural School, but which may, I fear, be comparatively uninteresting to the rest of my audience. In subsequent lectures I hope I may find it possible to deal with questions of a different and pleasanter kind,—less elementary, and such as all of us who wish to be artists are bound to interest ourselves in. It is a good rule of the Academy that compels you all,—painters and sculptors, as well as architects,—to listen to architectural teaching. But no teaching can be worth anything which tries to accommodate itself to the indifference of an audience, and it would be a mistake to assume for an instant that any of you wish to know only a little about any one of the arts, and care only to attend here because the Academy insists upon your doing so. The first test of an artist is that he should feel a real and absolute, if not an almost equal, interest in all the arts, and the painter who does not care to know something about architecture is sure, at least, never to be so good a painter as he might have been, whilst to you students of sculpture, I would say that my art and yours are so intimately allied, neither in their highest developments being ever perfect without the aid of the other, that it is incumbent upon you, if you would excel, to know much more than merely a little about architecture. The three arts are, indeed, all dependent on each other. The most perfect building is that in which not only the architectural lines, proportions, and features are all good and beautiful in themselves, but one in which provision is thoughtfully and wisely made by the architect for the best display in harmony of the arts of painting and sculpture. The architect deals with outlines and masses, with light and shade, but for that deeper interest which touches one most after these general effects have been produced, he depends, except in the vastest buildings, upon the other arts, and he must know and feel enough about them to make him competent to provide for their worthy and dignified treatment. And surely it is not less needful that the painter and the sculptor should be so well trained in architectural detail as to make it impossible for them to do or admire work in which ignorance of that art is exhibited,—such ignorance being fatal in its effects wherever it exists or is conspicuous. Nor should it ever be forgotten that the study of the most permanent of all the arts has a real value if it leads all artists to consider in their work not only what is good for to-day and for the fashion of the time, but for ages to come, so that it may be looked at with love and respect by their descendants for many generations. So much only do I think it necessary to say by way of introduction to my subject for to-night, which I have selected as being one on which we ought first of all to understand each other, and on which one who is growing old may well speak decided words of counsel to you who are only on the threshold of your career. With what conception of art are you bound, then, to begin your work? The work of the architect is evidently complicated by conditions peculiar to itself. It must be useful first of all,—beautiful afterwards. Unless it is useful, it is not really artistic. Usefulness may be exhibited in trifles as much as in the greatest affairs. You must realise that it is not only necessary to learn how to plan a building so as to make it most thoroughly fit for its purpose, but you must learn also how to design every detail, so that it shall be the fittest for the place, and for the work it has to do. You must therefore begin by studying how to plan well, and how to build well. Good construction is the basis of good art; though even here a word of caution is required, for new modes of construction may be popular, but not good: and the only test that I know of good construction is the certainty of its being permanent. Unfortunately, you will find that this is the greatest temptation which will assail you from the first in your architectural career. You will be tempted to sacrifice solidity to some fancied necessity for ornament; but it is, nevertheless, the fact that many very noble buildings, of all ages, are almost absolutely devoid of mere ornament, and that no work which is not solid and well constructed and proportioned, however richly it may be adorned, is ever in the end lastingly ornamental. Consider for an instant in what way this rule affects you when in practice. The Egyptian and Greek remains,—quite apart from any intrinsic beauty which they possess,—affect every one by the evidence of their admirably solid mode of construction. The somewhat unsightly masses of brickwork which are all that are first of all seen of some great Roman works, such as, *e.g.*, the Baths of Caracalla, affect the senses in the same way. In Mediæval times, it is when you are traversing some passage formed in the thickness of a wall that the same feeling is excited, and in all these cases it is the respect for his work which the builder shows that reacts upon us. Nothing is ever entirely unworthy of notice that is done with this feeling, and as it would be wholly impossible to obtain, as it would also be absurd to demand, the same goodness of design in a mere temporary erection as in a permanent one, so the merit of an architectural work will almost always have some distinct relation to the solidity of its construction. The reason for putting this fact before all others which bear on the study and practice of an art is that if you have but a firm grip of it, all your studies will bear more fruit, because it will give you in one vital point an infallible critical test for the examination of all architectural work. And if I do not attempt to teach you in my lecture much about the merely practical side of your work, you must never forget that this is in no degree whatever because I wish you to ignore what is absolutely essential, but only because it seems to me that this Academy of the Fine Arts requires of its professors and of its students that their main devotion shall be to the artistic side of our art, with such incidental references to its practical side as grow naturally out of or tend to illustrate and explain the other. Such references, even if only incidental, cannot be infrequent. At every turn we are met with the question whether what we have designed is the best thing possible under the circumstances, not whether it is the most beautiful,—the best thing in architecture being always that which combines the most sagacious use of the materials available, the soundest construction, and the most convenient adaptation to the requirements, with thoroughly good artistic character and proportion in the mass and in all the details, and some evidence of imagination in the design. The architect has to work under limitations wholly unknown to the painter, sculptor, and musician, and yet his art requires for its perfection no less invention and imagination and loftiness of character. If we look carefully at painters' work, we are struck with the extraordinary extent to which the artist reveals himself in his work. On the canvas of a great painter you see not only the man who sat for his portrait, but almost equally the man who painted it. In a more subtle way the architect is revealed in his work. His refinement or his coarseness, his love of truth or indifference to it, are always evident. In the highest art it is the man rather than the society or the system that is seen; and as in ages when insecurity of life, tyranny of rulers, ruthlessness, or religious intolerance were rife, their very existence involved that of men of the strongest and most heroic character, so in the same times the greatest buildings were erected. The individual man lived often a higher life, and had a higher conception of his work, than is usual in more easy and perhaps more polished and virtuous times. At the same time, though, the highest art is a reflex of the spirit of the man. The man is dominated to a great extent by the age, so that the spirit of the age is seen more or less in the architectural works of all times. Our own history will be read in ours possibly long after all other records of its work are lost; and it lies with us to secure that the record shall be that of the best features, not the worst, of our times. The lesson for you is obvious: you must cultivate in yourselves a high sense of the requirements of your art, and a persistent self-reliance and individuality. Without these you cannot be great architects. And it is more necessary to insist on this with you than with your brethren of the brush and the chisel, because your daily life may be, and too often I know is, spent in working under influences wholly hostile to this higher view. It is well to speak thus to you who are still young, and who, being so, are also generous, and I hope enthusiastic. You will soon cease to be young; but unless you maintain to the end the other qualities you will not be great artists. There may, of course, be enthusiasm of a certain sort for bad things. Many of us, I fear, fancy whilst we are doing commonplace, if not vulgar things, that our work is worthy to excite it, never really realising any of the necessary conditions. And it is worth while to ask, therefore, what is it which really does create our enthusiasm in ancient examples? Enthusiasm is not merely the highest kind of interest. This may be kindled by historical associations; but a bare field on which a battle has been fought has this. Extreme age gives interest, but it need not be lovely. Singularity of situation, of material, of adaptation to exceptional purposes, may all give interest. But none of them create real enthusiasm. And the only architectural work which does excite it is that in which you find evidence throughout, that the artist thought nothing of his own part in it, but only of the perfection of his work, of its solidity first, and then of its refinement. Try by this test such buildings as the Parthenon, the Temple of Neptune at Pæstum, the Campanile at Florence, Amiens Cathedral, or the choir of Westminster Abbey, and you will find that all possess these qualities, and all of them kindle undying enthusiasm. Once learn to see that such qualities exist and produce their effect, and you have made one step at least towards possessing them yourselves. Nor is it necessary that you should have any hope of exhibiting your qualities on buildings of such importance as those just mentioned. Recollect that in Athens, in Italy, in France, and in England, small works have been at least as interesting and perfect as large ones, and that no artist depends upon the largeness of the work given to him to do for the opportunity of showing his

* First lecture, delivered Monday, Feb. 14.

real worth. I recollect when I sat in your place hearing one of the greatest of my predecessors,—the illustrious Cockerell,—declare that the most perfect thing he had ever designed was a scraper; and, strange as the illustration is, he was serious, and justified in being serious in such a view. It may be argued that in ancient times there was an intuitive rather than a conscious recognition of the need for refinement which I assume to be necessary; but that I am inclined to doubt. What, for instance, is the story of the long and slow development of Doric architecture, but one of an attempt to secure more refinement by the gradual perfection of every detail? The enthusiasm for what had gone before being the stimulus to greater perfection, and the refinement being the consequence of the enthusiasm. Or, again, in the whole history of art, is there a more interesting chapter than that of the gradual development, by repeated changes and modifications, of the circular Roman and Byzantine buildings, through the Romanesque apse, into the intricate and beautiful complete Gothic chevet of the French churches?—a development which was gradual only in the sense that we can trace all the steps by which it proceeded, but which, as compared with the slow and patient development of Egyptian and Greek art, astonishes us by the rapidity of its proceedings, the fertility of imagination shown by those who conducted it, and the vast and complete change in all architectural forms which in a few years was achieved. Some among you may have no enthusiasm for your art, and may have no interest in such evidence of what the architects of old must have felt. You may have been told to be architects, not because you refused to be anything else, but because the profession seems to offer a fair mode of getting a living. This is to reduce your art to the level of the basest trade, to deprive yourselves of all chance of real success, and to condemn yourselves to a career of mediocrity which will benefit neither you nor your neighbours. If there are any such students here, let me beseech them to take a new view of their duty, and to cultivate, by every means in their power, the frame of mind I have been describing. It does not lie in the power of every one to become a great artist. But it is in the power of even the least gifted among you, by cultivating his reverence for the ways and work of great artists, to make it impossible that he should ever be guilty of anything wholly bad and contemptible. Consider what a glorious inheritance you have! In every part of the civilised world, the architect whose eyes are open finds on all sides works which speak more forcibly, the more he examines them, the great and eternal lessons of his art. He, above all men, has a delight in the past, because he can read better than others the most permanent and intelligible of its visible records. If he is wise he never ceases to learn; for the examples he has to study are of inexhaustible number and variety. Even if circumstances compel him to limit his studies to his own country, there is no cause for regret; for I suppose the man has not yet lived who has seen all that is worth seeing, even of English architecture; and as much may often be learnt by the patient study of small works as by more ambitious attempts to study, to group, and to analyse the origin, principles, and developments of the art all over the civilised world. When you have resolved to look at your work in this spirit, you must be reminded that there are some minor conditions of success which I do not think beneath notice here. Your first business is to become an accomplished draughtsman. As you will hear presently, good architects have existed, and may always exist, who do not draw well; but no one can safely say to himself that he will elect to be numbered among them. Architectural draughtsmanship is a good training for every one, because its first essentials are clearness and accuracy; and the man who has to depend very much for his knowledge of the effect his work will produce must learn so to represent it on paper as to insure that his drawing is a fair representation of its effect. The habit of tinting and shading architectural elevations is a bad one, and not to be encouraged. It is a simple waste of time. In outlining geometrical drawings, as well as in sketching, never use a very hard pencil, and make up your mind in the latter to dispense almost, if not altogether, with indiarubber. The essence of good architectural drawing is not only that it should be clear and accurate, but that it should be done positively and once for all. Nothing is more fatal than a slovenly and tentative habit in architectural draughtsmanship, and if you indulge in it you will find it stand much in your way when you attempt to make original designs. When you draw these, the first thing you must endeavour to accomplish is to acquire the habit of seeing in your mind what you want to draw before you draw it. To see some men draw, one might almost suppose that the pencil was gifted with the miraculous power of making a design, so little does it seem to be certainly guided by the hand that holds it. The habit of picturing your design to yourself before you draw it would save a great deal of this confused sort of work. Knowing what your intention is, you have then only to put it on paper; but, if you have not taken this preliminary trouble, you will never work with half the accuracy or speed which would otherwise be possible. Good draughtsmanship is a necessity in these days for a really accomplished architect. It is impossible in this respect to put ourselves exactly in the position of men who had not our facilities and our system of education. It is true we are not better artists than they were; but in one sense we can draw better, and are, therefore, bound to do so. I am not aware that any one knows how a Greek architect set out his design. And as to the Mediæval draughtsman, we known, by such books as that of Wilars de Honecort, a thirteenth-century French architect, that an architect's drawings then were something like children's drawings now. And even at a later date, the still extant original drawings for such works as the front of the church at Louvain, the steeple of Ulm, and the cathedral at Köln, were strangely unlike the exact geometrical drawings which we are able to make. These drawings,—published in Moller's "Denkmaler" and Hollar's drawing of the steeple at Mechlin, engraved, no doubt, from an original drawing, affords interesting illustrations of this kind of elevation. You will find that though they are in elevation, they are frequently so far put into perspective as to exhibit at all points the plan or horizontal section of the work. Both the drawing of elevation and plan are, however, so slight, that it must have been impossible for any architect to have satisfied himself without further details, and these, there is some evidence to show, were set out by the architect himself at large on a floor specially provided for the purpose. Such a floor exists in the work-room over the passage to the Chapter-house at York, and at Limoges the original setting-out of the groining was found by M. Verneille in a similar position. Possibly also models were more used than they are now. At Louvain is still preserved a most exquisite model, cut in stone, of the complete design for the west front of a church, which itself has never been completed. When compared with the design, which is also preserved, it is seen that the model represents mouldings and traceries with an exact accuracy which is not attempted in the drawing. But the making of a model by an old architect, in place of a careful geometrical drawing, is no excuse to any one for making careless drawings in the first place now. They are sure to lead to careless details afterwards. Too many of you come here wholly ignorant of all works on your art. Many of them, to which it is always easy to gain access, will give you more evidence of the best kind of architectural drawing than any verbal hints can. But you will find that in these there are united clearness, accuracy, feeling for detail, delicacy, and conformity of line, and you will find no back-lining to mark the supposed shaded side of projections, and none of those provoking splotches of black which are unhappily so much in favour with some young draughtsmen. A power of drawing in perspective is of the first importance on two grounds: first, that without this knowledge your enjoyment and success in sketching will be very small; and, secondly, because it will render it more easy to you to realise the effects of your building in perspective, without having the trouble of making a careful drawing or a model, to convince yourself of its real appearance. Without this power you will hardly be able to realise the real light and shade of a design; and without this ability it were better never to attempt to make a design at all! The delicacy of draughtsmanship on which I have insisted will lead to refinement in other ways. An essentially vulgar drawing may be made of a refined building; it should be your aim to let the drawing itself have that air of refinement also. You are, all of you, armed with mathematical instruments the like of which no age before our own has ever seen. Remember that these are useful servants and no more, and that whenever you can do so, you had far better use your hand in place of your instrument. You cannot practise this too much or too steadily. Draw accurately, firmly, and, as far as may be, with a single stroke, the outline of a Greek or Etruscan vase, the volute of a good Ionic capital, the sections of Greek mouldings, and equally of our own English mouldings of the thirteenth and fourteenth centuries. The hand trained in this way is, believe me, a much better servant than the bow pencil. The curves which can be drawn by a trained hand, under the guidance of a trained eye, are far more beautiful, because more subtle in their variations and prolongations, than those of any instrument; and I insist on this point, because, unhappily, the bow pencil, and not the hand, is at the root of almost all the so-called ornament of the nineteenth century. Another habit which it is desirable to encourage, is that of representing with a few lines the effect of several. In drawings to a very small scale, the attempt to represent every line of moulding and detail is sure to be a failure as well as a waste of time; and the selection of those lines which are essential is always evidence of good draughtmanship. This cannot be done without a real knowledge of the character of the details. And as no one can draw a building accurately without this knowledge, I need hardly say that it is very far from a waste of time for a painter to give some attention to architectural detail. Some of Turner's pencil-drawings are capital examples of his power of indicating so accurately the details of a building that no one need be in doubt as to the style in which it is built. He could not have done this unless he had educated himself by the study of architectural detail, and his example ought to be followed by every painter-student who wishes to be able to introduce any architectural features into his pictures,—as who does not? One word of caution is necessary here. The power of making good and attractive drawings is of immense value, and may make a vast difference in your prosperity and success in life. But it is a means only, and not the end. It has its dangerous side. It is possible to make a design look well on paper which will never pass muster in execution. Nothing is more suicidal than this; but unfortunately there is nothing against which it is more necessary to warn you. If you devote yourselves to making attractive architectural drawings, do them always, I beg you, with a conscientious determination to represent your work absolutely as it will appear,—the real object of working out architectural designs in perspective being the discovery of weak points in the design, so that they may be corrected in execution. When once you are able to draw fairly well, you are prepared for what is the best and widest field of study,—the buildings which are the best illustrations of our art. And in these it is well, I need hardly say, to devote yourselves as far as possible only to the best examples. In sketching, it is best at first to err on the side of formality,—to draw, above all, clearly and accurately, the ground-plan of every building you visit, for without this, no other sketches are complete, and with it even slight sketches of the elevations or details are nevertheless intelligible. At the beginning, you can hardly take too many dimensions; your work must be sketched and measured on the spot with equal accuracy. At a later period you will be able to generalise more, and to dispense with this elaborate detail in your studies. In sketching, never make the common mistake of using the commonest paper. Treat yourselves, from the first, to luxury in this one respect. Make your measured sketches in a book, and take care to make your dimensions ample enough to ensure the accuracy of the drawing you make from those sketches; but in the case of mouldings, of sculpture, of the filling in of panels or arches, let your sketch be as carefully drawn as possible, and do not depend at all upon your two-foot rules for the accuracy of your sketching. Pay special attention to such points in construction as the jointing of stonework, the design of mouldings meant to meet special wants, as,—*e.g.*, the slopes of buttresses, and of other members intended to throw off water, the adaptation of architectural features to their situation, as, for example, the details used near the eye and far from it, and the modes adopted for making them both properly visible, and at the same time strong enough for their place and

work. Finally, in whatever style it is that you are most interested, never fail to draw with the utmost care, and to store up in your mind the effect of all the best mouldings you see. There is no part of your studies more important than this. Never believe any one who speaks lightly of the science or art of moulding (I call it by both terms, because it embraces both). By no test can you separate good work from bad more surely than by the comparison of the mouldings. A good moulding grows out of the necessities of the occasion. It gives us the power of accentuating our lines or proportions in the most positive manner if we choose, or of softening them off so delicately as almost to conceal the transition from one feature to another. Without their aid there is a rudeness,—a coarseness, one may almost say,—which is offensive; whilst with their aid that refinement of line which, as I have told you, it should be your great aim to achieve, is made more perfect, and carried to greater perfection than in any other way. In drawing mouldings, I advise you always to sketch them with as much accuracy as possible, and to a good size, and on no account to depend upon correcting your indifferent sketches by a multitude of dimensions. Your eye, your hand, and your memory will be misled. You will look again and again at your sketches, and will forget all about your dimensions, and so be led to a permanently false impression of their real contour.

Remember always that sketches of mouldings alone, without equally accurate sketches of the features to which they belong or with which they are connected, are useless. One of the most accurate works on the subject is utterly valueless, owing to an omission of this kind. Arch mouldings are drawn without any plan of the capitals which support them, or of the jambs below the capitals. The relation of one of these to the other is of the very essence of the matter, and unless both are drawn it is really of little use to draw either. In the same way the relation of the mouldings of a window to its tracery, of a column to its capital and base, and of both to the entablature, ought always to be recorded in a sketch.

From the drawing of mouldings you will go on to that of sculptured or carved members, and in these it is the effect which was intended to be produced of which you must be thinking. So, for this purpose, I attach but little importance, save as a test of mere draughtsmanship, to the work which you have to do in our schools from casts. All architectural features in which carving is introduced ought to be looked at and drawn in the very place for which they were intended. If a cap looks perfectly well hung against a wall, on a level with the eye, it can hardly be suitable for its real position in the building some 50 ft. above the spectator, and a great difference in treatment ought to exist between a piece of carving which is made to appear to do hard service, and another which evidently has no such serious work to do, and is rather the evidence of the artist's pleasure in his work. There is no subject for study more important than the relation of carved ornament to architecture. You know how in all times it has formed a leading feature. The repetition of definite ornaments at regular intervals is one of the easiest modes of securing due attention to the member on which it occurs. The moulding adorned with carving is always more noticed than any other, and the lines which require special emphasis are those to which such work ought to be confined. You will soon find that these carvings, as well as the mouldings, are modified to suit their positions, near or at a distance from the eye. You will notice also certain contrasts between the ornament in good and bad work. In the former it is never aggressive or too prominent; in the latter it is almost always so. In the former it is used with due deference to the common sense of construction; in the latter it disregards the construction entirely. I cannot give you a better example of this than is afforded by the division of such an enrichment as the so-called dog-tooth flower. In good work this is always divided to suit the joints of the stonework; in bad work it is set out with absolute uniformity all round an arch without any reference to the joints, which thus, instead of coming always between the flowers, occur in the worst possible places. I mention these points because, if you once notice them for yourselves, you will see how important they are, and how certainly they indicate the quality of the work in which they are found.

As there is no sort of training for an architect equal to that of the study of buildings, so it is absolutely impossible for you to learn your art only from the lessons which we are able to teach you here, or which you learn in the routine of architects' practice. At all costs, then, you must spend a certain proportion of every year in travelling and examining buildings for yourselves, and the only special advice I can give you now is, not to try to cover too much ground at first. It is wiser to study a few good works well, and to make yourselves thoroughly masters of them. Having done this for some time you will find your power of seizing the best points in the buildings you visit increase rapidly, and you may then make your journeys more rapid and less exhaustive and particular. These very general suggestions may seem almost unnecessary; but unfortunately I know from experience how few of us spend enough time in sketching and measuring existing works; and how few manage to make clean, clear, decided sketches of what they see. Observe that it is generally impossible to improve a sketch after it is once made; whatever it is, pray leave it with all its first freshness about it. There is a virtue in that which will never be increased by after-work. If you have any feeling of the artist in your composition it will be impossible for you to go on for long drawing the good work of other men or other times without gradually finding yourselves distinguishing clearly between good, inferior, and bad work. In this country it so happens that you all have, within reach, examples of a national architecture perhaps as noble, and certainly as universal in its developments, as that of any other land. Some of you, as you pass through our schools, give painful evidence of the fact that you wholly ignore this great,—indeed, untold,—advantage. Compare your own chances of education with that of the student whose fate has ordained that he shall learn all that he knows in new countries, where not a fragment remains of an older art than that of his own time, and you will see how immense your advantages are compared to his, and how far in advance of him you ought to be in real taste and culture. But I am told, sometimes, that you have no time, no opportunity, no means to avail yourselves of your advantages; and when I ask one who excuses himself in this way whether he has drawn much of Westminster Abbey, or of the cathedral nearest to the town from which he comes, I find that he has deferred this duty to some future day, or that he thinks the advice too impossible to be practicable. Others among you, too, may believe what you are often told, that what you ought to aim at is an original style, and that the constant study of already executed work is not likely to assist you in this. Well, this is too long a question for this evening; but if the nineteenth century is to distinguish itself by not caring for all that has gone before, I can only say that it will distinguish itself in a quite unique fashion. I shall have to speak to you more at length on this point in my third lecture, and need, therefore, only say here that we know of no period in our art in which architects were not studying the work of men who had gone before. They studied them wisely, so that they might improve them. The variations which they made were sometimes so slight and so slowly made as hardly to amount to variation at all, and if there ever was a people more prone to such a course than another it was that Greek nation to whose art we all look up as among the most inspired results of the highest training.

I would never have you draw and sketch existing examples with a view to copying or reproducing them. That is wholly contrary to right principles. What I wish is that you should draw so much of them as to find yourselves penetrated with the feeling for architectural form and perfection which, as the results of centuries of development, have been discovered to be the best. This study is, in truth, analogous to that of the sculptor, as illustrated by the exquisite work of that great man Flaxman which just now you have an opportunity of studying within these walls. You see him drawing from the life until he has mastered all the motions and attitudes, outlines and muscles of the human form. Then, possessed to the full of this knowledge, he lavishes his poetical spirit on combinations of figures, which illustrate at every turn his power, his knowledge, and the perfection of his sentiment. The commonest subject in his hands becomes endued with a beauty and a grace which are so natural as to seem inherent. What the human form was to him, the complete study of the accumulated experience of ages in existing buildings is to you. And you are to use them not that you may steal from them, but that you may be able to deal with the problems that come before you with the same spirit and power that they show, whilst you avoid with care the failures and mistakes which you can discover in them.

You may well ask me here how far such a due study of ancient examples as I have been advising must be carried in the direction of purely archæological inquiries; and I think some advice on this point will not be thrown away. It is quite true that archæology is not architecture; but one-half at least of the studies of any architect who cares for anything beyond the work of his own hands has its antiquarian side; and what is important is, that this alternative side to your studies, far from diminishing your interest in them, is sure to enhance them. In the history of the development of styles, you have matter for endless interest. The buildings you admire and examine are the work of men of whom you know nothing, and who lived ages ago, perhaps. Unless you can put them in their proper places in relation to each other, in their proper sequence, you will never be able to understand their gradual developments; and accurate knowledge on such a point is, beyond everything, useful to men who have any hope of making any further developments in their art. There is a fruitful sort of antiquarianism, and a dry and fruitless sort; and it is with the former only that I care to advise you to interest yourselves. You may well leave the rest to the men who are antiquaries and nothing else, and with whom art counts for no more than antiquity. But you cannot leave to them those analyses of the progress of art in each man's work, from one man and one age to another, or from one country to another, without most serious loss to yourselves. I know nothing more useful than such studies and such accomplishments as these. They will prevent your being drawn into the downward current which sets strongly in the direction of business as against art; for the man who has once devoted himself to them will never lose that interest in the higher developments of his art which it ought to be, above all, your ambition to have and maintain.

There is much more to be said as to the direction your studies should take; but before I touch on this I must get you, if I can, to realise that you must devote some at least of your time to the sister arts of painting and sculpture; and this not with any idea of excelling in the practice of all the arts,—that is a happiness reserved for a few heaven-born and greatly-gifted mortals,—but rather with the thought that unless you know enough about other arts to be convinced of their highest developments in connexion with architecture, you will be like so many of your predecessors, unable or unwilling to recognise that in the harmonious combination of all the arts is the greatest future for each of them separately; and it is from among the ranks of you who are now growing up that we hope the men will come who will have the happiness of seeing what will really be a resurrection of art in this land. The practical divorce of the arts has ended in the gravest loss to all. The architect has become too much of a mere builder; the painter lives to make pictures, to be lived with and loved by a few, instead of the many; and the sculptor's life is too often spent on work for which he cannot care much, because it is of no general interest, men having too often forgotten that his work is beyond all other that which completes and beautifies and ennobles the work of the architect. On some other occasion I shall hope to be able to speak to some of you at length on this point, for I am persuaded that there is nothing by which both arts will gain so much as by the more frequent combination of the two. For your own share in such a consummation in the future, you will not find so much opportunity for study in England as elsewhere, but you should lose no opportunity of familiarising yourselves with examples of mural decoration, whether by sculpture or painting, in books, of which, as you know, we have access to a goodly store in the library of this Academy; and for acquainting yourselves with sculpture, there is nothing more to be desired than that you should give up some of your time to drawing and modelling from ancient examples, a very large proportion of the finest works of all times being the sculptured decorations of

buildings of the Classical, the Mediæval, and the Early Renaissance schools.

No small advantage will those gain who devote some of their time to learning to model. In my opinion, all the decorative sculpture or carving in a building ought to be modelled in the first instance by the architect. This is the only way in which that harmony throughout the work can be secured which is essential to good effect. It is impossible to direct another man properly merely by giving drawings for such work, and you must learn to give your instructions in the round. The day, I hope, may not be far distant when all sculptors will agree with me,—if, indeed, they do not so already,—in thinking that the best of their work would be even better than before if it showed a thorough appreciation of, and fitness for, the requirements of the building in which it is placed. I know nothing more fascinating than the evidence in most ancient work of the same feeling as to detail being common to the architect and the sculptor. You do not see where the work of one ends and of the other begins. The sculptor seems to know all about architecture and the architect to be quite conversant with sculpture; and I much wish that in the architectural school here we may occasionally, or even, I may say, regularly, find some students of sculpture laying aside their modelling tools and their chisels, and coming to us for some instruction in the art, a good knowledge of which is essential to their own complete success. In future lectures in this course I shall have repeatedly to refer to the works of sculptors and architects, in which it is difficult to say which of the two arts can most rightly claim the artist. But if this is again to be the case, the young sculptor must understand that he has to master something more than the rudiments of architectural styles, and that, when he condescends to think of work which is half-architectural and half-sculptural, it must be with a complete sense of the equality of the two arts, if his work is to live with that of the great masters of all old and true schools.

If the sculptor ought to learn so much of architecture, how far ought the architect to go in the study of the human figure? It is a question surrounded with difficulty. A great building may be built which shall not include any representation of the human figure. Either by accident or by robbery of their sculpture, some buildings which once had figure sculpture have none now, and yet are hardly less evidently beautiful in their effect. The practical difficulty about drawing from the life is that if it is carried a very little way it is of no service, whilst if it is persevered in very far it is almost certain to be at the expense of other accomplishments which are even more essential, and there is a risk that the student may end by being both a bad figure-painter and a worse architect than he would otherwise have been. It is only, therefore, in those very rare cases in which an architectural student feels a complete conviction that he has the unusual and rarely-given power of combining the two arts that he should venture to avail himself, to any great extent, of the privilege which is conceded to him in this Academy, though he should never lose any opportunity of studying the history of the combination of painting with architecture, and of making himself fairly learned in the theory of such work. This he may do, whether he can draw the human figure or not, and unless he has done it he will never be able to associate himself with a painter in counsels as to the completion of his own work.

In addition to improving your skill as artists, on which I have been saying so much, you are bound to spend a great deal of time on other studies, without which you can hardly hope to rise to real eminence. There is, first of all, a long course of practical study, which will show its results in your work with certainty. All the Visitors of our Architectural School feel, I am sure, as I do, that there is much to be derived in this respect in the work of the majority of the students. You ought never to make serious mistakes about simple matters of construction, or simple details of arrangement. Many of them are the result simply of a want of a little common sense, than which there is no quality that an artist of any sort ought more sedulously to cultivate, and the architect most of all. And as, perhaps, it is when you make a ground-plan that this failure is most evident, a few words on this, which is the foundation of all good architectural work, will not be out of place. In making a plan there are two things to consider: first, the convenience of the building for its purpose; and next, its suitability for its position. All good artists welcome with pleasure what is called a difficult site. In truth, there is no site so easy to deal with. It is when the site has no marked features of its own that the architect must make those of his own work predominant. The Acropolis of Athens and the Forum Romanum of Rome are, in one sense, difficult sites. That is, they are so picturesque, so irregular in their levels, that everything has to grow out of the necessities of its situation. There are no lessons more useful than those which you may learn from such examples as these. The Greek added one building to another in an almost picturesque confusion, and in a mode in which, if we believed some of our teachers of a few years back, it is impossible for any but the most erratic Gothic architect to take any pleasure. The Roman made a winding and irregular descent from the Capitol, with buildings of wholly dissimilar style on either hand as he descended, and then when he had passed through the arch of Septimus Severus, and found himself in face of a straight road for a short distance, he took care that it should be occupied by a succession of irregularly-placed and designed columns, monumental pedestals, and buildings, whose beauty was that which came from the individual character of each, as well as from the gradual growth of the whole, and the evidence it afforded of the historical continuity of the community and its arts. Nor when the Forum was left behind, and but a short distance separated the Roman from the Colisseum, was there any care to secure a straight road from one to the other. The paved roadway meandered on under the arch of Titus, suiting itself to whatever conditions existed, in the easiest fashion possible, and without any thought whatever of those necessities for formal setting out of cities which are only reasonable when, as in many Transatlantic examples, there is no history whatever to be recorded, and a whole town is laid out at one time, and completed almost as soon as laid out. There are cases in which, however, the wise architect endeavours not only to build to suit his site, but to make the peculiarities of his site suit some sumptuous and scenic laying out of his whole building. Time will not admit, however, to give more than a passing reference to a subject, which in itself affords materials for many a lecture. Nor is it at the outset of your life that you are likely to have such opportunities as would enable you to realise the advantages of the study.

I have told you that you must study convenience of plan. This you may do, not to the exclusion of architectural effect and character, but always with a strict eye to it. In designing the plan of a house, for instance, it does not do to make the external design first and then to make the interior fit it somehow or other. It is necessary to keep both in your mind, but it is the interior that ought to be supreme. The best exterior in the world would not atone for a faulty internal plan. And observe that a good interior is not simply one planned upon some every-day scheme, and one in which life does not simply go on smoothly and without hindrance, but one which has so much suggestiveness and special adaptation as to make it in every way an interesting one to live in or to use. To accomplish this you must realise how every part is to be used, and so contrive as to give every one pleasure in using it. It is this harmonious and reasonable variation of plan that gives the greatest value and charm not only to the interior, but, as a natural consequence, to the exterior also.

The same rule applies to all other buildings. If they are well contrived for their special use, depend upon it you will be just as well able to make their elevations good as if they are carelessly contrived. A church requires by custom, by law, or by sentiment, a generally similar arrangement of the plan. At least, it requires the same component parts,—a nave, a chancel, a porch, a steeple, a vestry. How differently may not these be grouped and designed! The variations in the provision for the given wants in this case are, as you know, innumerable. And how much more various may not the plans for a house be?

If you realise that the real value of architecture, as of all the arts, is its human and personal interest, you will see how impossible it is that any art can be worth anything in which this is wholly ignored. The only justification of endless rows and groups of houses, all arranged on the same lines down to the pattern of the scraper and the design of the area-railings, or of the balconies, is that the people who are to inhabit them are so identical in all their wants, wishes, and modes of life, that one pattern of house will do for all. Fortunately this is no more true of this age than of past ages. And now, as then, the best planned buildings will be those which take account of the existence of a diversity of men, with endless varieties of tastes, and wants, and circumstances. It is here that the study of ancient art is so invaluable. In former days, with much less facility for intercourse and movement, we see how many are the adaptations which architects had to make when they went from one part of Europe to another. In our own times this is of every-day occurrence. An English architect may be called on at any time, at the very outset of his career, to go to some foreign dependency where every condition of life and climate are wholly different from what they are in England. The plans as well as the architectural forms which are suitable in England are wholly out of place in a tropical country. In one, just as much as in the other, the same first principles will have to be observed, but the resulting forms will be wholly dissimilar; and the man who begins life with some knowledge of how such differences have been successfully dealt with before, has an untold advantage over the man who treats all countries and all climates alike, as if the satisfaction of local requirements were not, in truth, the very first condition of a good piece of architecture.

Before I conclude, there are two points only on which I must say a few words. One is the necessity for study of much which we cannot teach you here, and which you will never learn in the workshop of an architect. Such, for instance, is the study of language and the study of books. I cannot too strongly insist on the former. Without a knowledge of modern languages you cannot travel with complete pleasure, and you cannot know anything of the largest half of the literature of your art; and unless you have travelled, and unless you have read a good deal of what architects and critics in other countries teach and think, you have deliberately shut yourselves out from a large portion of the education which is indispensable to an accomplished architect. As students, you have access in this Academy to a most admirable artistic library, year by year becoming more and more complete, and where you may do more to cultivate your own taste by acquaintance with the best examples of all times, than I can do for you by any number of lectures or addresses. And, in the second place, I wish to say but a few words on the way in which you avail yourselves of the instruction offered you in the schools. I have no desire whatever to exaggerate its importance. Most of you, I hope, are at work day after day on the drawings and designs of the architects under whom you are studying. Nothing, I believe, is a better training than such work as this. If you have the original drawing,—be it general design, or detail of a part at large,—and are condemned to complete it either by putting his pencil lines into ink, or by the slower process of copying it, you are learning in the best way all that he can teach you. But you are in one groove, and affected only by one mind; and by coming here you find yourselves brought face to face with new ideas and views, inasmuch as you have to work under the direction of the Visitors assisted by the Master.

But, to make any good use of such opportunities, it is not enough to come here occasionally, and only and so often as is absolutely necessary, but with regularity, punctuality, and preparedness. The one regret that I feel in connexion with our architectural school is that the students do not, as a rule, appear to wish to attend once more than is absolutely necessary, and when one sees anything short of the highest zeal, one is led to anticipate something very far short of the highest success. It is this absence of enthusiasm for his work which is fatal to an artist. If you have it you will think no hours too long for work, and labour, instead of being toilsome, will be your greatest pleasure. Unless you have enthusiasm for your art yourselves, how can you expect that others will have any to spare for you and your work? It is a contagious quality. The artist who really has it does his work in such a way as to make others feel for him what he feels for his own work. This is seldom, if ever, worthy of love and admiration, unless it is the outcome of a zeal and a fire which are real and intense.

If we have such a zeal, how will it show itself on our works? This is a question which affects what is called the practice of our art as distinguished from the study. I have left myself scant time to speak on this part of my subject, but fortunately there is not much to be said. In art a man who has zeal must almost of necessity have more zeal for some of its forms than for others. The forms which our art has taken are styles in which it is almost impossible for any artist to take an equal interest. And a man who is really an artist will find it natural to practise in one style, impossible to do so in another. Modern practice has tried to convert the world to an opposite view; it has assumed that an architect can design equally well in any style. Of course, if this were true, there would be no art in the work, for an artist must show himself in his work, and it would be impossible to do this in antagonistic things. It is not, in my judgment, necessary or desirable that I should pronounce positively to you as to which is the best form for the architecture of the present day. That, when you have studied and thought, and worked for a few more years, each of you will have to decide for himself. But this I can tell you, that if you have zeal enough and enthusiasm enough to care for your art for Art's sake, you are far more sure of success by adhering strictly to what you believe to be good, true, honest, and artistic work, than if you attempt to please everybody by doing whatever you are asked to do in whatever style or fashion may be dictated. The man who knows how to do one thing well is more certain of success than he who tries to know a little of everything, and in study and in practice common sense and good art both claim from you that you should at any rate know the style of your own choice well. Beyond all doubt it is a sort of inspiration that is required in the artist who is ever to do any really great work, and this will never come to one who never dreams of perfection, who thinks first of all of gain and worldly interest, who treats his art as a mere matter of business and routine, not as an imperious mistress who must have all his devotion and all his heart. To secure this enthusiasm you must be dreamers in one way only,—you may give reins to your imagination,—you may dream of beauty, of majesty, of perfection,—you may picture to yourself what you would and will accomplish; but you must be no dreamers about your proper work. That must be constant, steady in purpose, thoughtful, and always in some way bearing on your art either directly or indirectly. The more time you devote to study the more will you become engrossed in your art, and the more you will find that it is delightful and interesting in all its changes and developments of old, and in the practical application of what you learn from these to the art of your own time. Industry alone will not make a great artist; but if there is one thing more certain than another in art, it is that all great artists have been industrious, and that if you wish to be numbered in their ranks, you must follow their example.*

THE SOUTH KENSINGTON DRAWING-BOOK.

The idea of teaching drawing conveyed in this publication is very different indeed from that which most of the present grown-up generation experienced in learning to draw. We can most of us remember, most of us who draw at all, "Somebody's First Drawing-book," which contained shaded drawings of rugged blocks of stone with a little grass growing at one corner, of an old stile with two of the steps gone, a dormer cottage-window with a blanket hanging out from it, and roofed with tiles presenting most picturesque dilapidation. We had the first drawing-book for the figure also perhaps, which might have provoked *Othello's* exclamation, "Noses, ears, and lips!" or, we should rather say, for the head, for the figure in those days was considered improper for amateurs. Professional artists were a separate class, a kind of people from whom nothing better could be expected, and who had a code of morals of their own which did not interfere with their licentious wish to draw the human figure as a whole. For the amateur it was sufficient to learn to draw heads; anything below the neck was unnecessary and irrelevant.

The question of learning to draw the figure is not before us at this moment; at least the South Kensington Drawing-book,* as far as we have it, does not deal with that at all. But the contrast of these elementary and "First-Grade" drawing-books with the old style of first drawing-book is remarkable. On the old system, the more dilapidated and rugged an object was, the better fitted, apparently, to form a lesson in drawing. The aim of such lesson-books, or their effect at all events, was to teach young people to try to sketch in an offhand, free, and picturesque manner, before they had learned to study proportions or perspective, or had acquired the power of handling a pencil so as to draw a regularly-composed curve or a straight line. This was completely reversing the proper order of things. The rapid freedom of sketching which an experienced draughtsman is capable of is the result of practice and experience, and is not to be attained by attempting freedom and dash all at once. Such an attempt is only likely to lead to habits of inaccuracy both in observation and in representation.

Drawing is, essentially, the power of representing accurately on paper the form and proportions of any object we see. The more precise and clearly defined is the form, the more delicate its outlines and curves, the greater is the difficulty of accurate representation. To begin by copying rough, and what are called picturesque forms, as practice in drawing, is therefore, to begin at the wrong end. Any one who can draw precisely-defined and delicate forms accurately can draw any which are less precise with the greater ease and truthfulness. Any one who can be sure, on taking a pencil in hand, of making precisely the line and form and proportion which he wishes to make, is a draughtsman. That this was the way in which draughtsmanship was regarded in the great age of painting is indicated by the well-known story of the O of Giotto, and of the test-lines, also, drawn by Apelles and his rival, to go further back. Whether such stories are true or apocryphal is little to the purpose. They show the opinion of those who invented them, at the least.

This is the view of drawing practically exemplified in the South Kensington Drawing-book. The elementary freehand-book, which precedes the course, sets before the student the task of drawing correctly, without the aid of instruments, certain forms, both in straight and curved lines, which are set before him as copies. We have first simple forms,—squares, triangles, hexagons, subdivided in different ways. Then follow square forms, modified by certain variations in their outlines, by interlacings and crossings; then circles, one within another, interlaced in various ways, but all founded on geometrical proportions. Not only are these to be drawn by hand alone, but it is directed in most cases that they are to be drawn a slightly larger size than the copies. In this way the student is compelled, instead of copying mechanically, to consider carefully the relative proportions of the forms placed before him, and to make himself thoroughly acquainted with their principles and construction. A few guiding lines, centres, and general outlines are dotted in the copies, which are to be lightly drawn by the student, so as to be erased afterwards, before proceeding to copy the object in detail. In this manner the student learns to acquire not only precision of hand in the mechanical use of the pencil, but precision of eye and judgment in estimating the sizes and relative proportions of spaces. Simple as are the objects given, in one sense, any beginner who has gone conscientiously through them, and succeeded in making fair reproductions of them on a large scale as suggested, will already have made considerable progress in the use of the pen or pencil. The directions refer to the use of pencil only, as best suited to beginners. We are rather disposed to think that it would be an improved practice, even if the examples were drawn first in pencil, to require their repetition in ink without any pencilling in first, except of the main guiding lines. It might be requiring too much from a mere beginner to draw all at once in lines that cannot be erased or corrected. But we are certainly of opinion that at a very early stage in learning to draw, the attempt should be made to draw in a material that does not admit of erasure, more particularly when it is permitted to make erasible guiding lines first. There is so much temptation, with a lead-pencil in hand and a piece of india-rubber close by, to "make a dart at the thing wished," and to get at it by repeated trials and erasures. An indelible drawing-material is a stern master, and allows of no heedless and tentative lines; it compels the pupil to think about every line and its relation to what has been done and what is to be added, before he draws it. The drawback to the pen is the fact that, in its usual form, it is not calculated to make lines of equal thickness in all directions. For this reason, no doubt, the advice is given that if drawing with ink is resorted to it should be with a brush, and not with a pen. This is, however, rather doubtful advice. Nothing is more delightful to work with in drawing lines which require some modelling as they are drawn, some delicate variations of thicker and thinner, than a small brush. It seems to go of itself, and almost suggests the delicate variation or modelling we have referred to. But for the class of objects shown in this book—for these very precise geometrical figures, which demand the greatest precision and evenness of lines, the recommendation of the brush certainly seems ill-judged. The old form of reed pen which was once so much used, but which we never see now, was an admirable instrument for this kind of work. Its place, however, seems to us to be well supplied by the self-feeding pen with an ink-supply in the handle, invented by Messrs. Waterlow, and which might be made very useful in drawing of this class, being a pen producing a thin even line, instead of an "upstroke" and "down-stroke."

The second book of the Elementary course gives decorative forms founded mostly on flower-forms conventionalised; and this is followed by the First-Grade course of Freehand, in six books, and the Second-Grade course in four books. The examples in these consist of bits of architectural detail, chiefly classical, and various objects, such as vases, musical instruments, and others presenting problems in the delineation and foreshortening of various curves, and the accurate balance and proportion of parts. These examples, we are told in the preface, have been mostly selected from among the objects in the South Kensington Museum, and in no case from books or previously-published illustrations of any kind. The original drawings have been made by pupils of the National Art Training School, under the direction of Mr. Poynter, and carefully examined and corrected by him. The first object given in the First-Grade course is certainly not very satisfactory or interesting, being a very bald-looking elevation of what is called an "English House, Sixteenth Century," the main lines only being given, as if drawn from a block model. If such an object were selected at all it would seem more to the purpose to have given a perspective view of it. This, however, is the only one we are at all disposed to find fault with. In general, the examples given are of interest in themselves, consisting in many cases of some of the best forms of Greek conventional ornament, the copying of which constitutes a training in taste as well as in drawing. Some of the artificial objects chosen are also excellently adapted for the purpose: we may notice the old viol di gamba, given in Book IV. of the Second-Grade Course, both in elevation and perspective. The accurate drawing of the delicate and numerous curves in the contour of this instrument is an excellent bit of practice.

The book is calculated to be very useful to any one engaged in teaching drawing. Each copy forms, we may add, a drawing-book as well as a set of examples, a blank page being left opposite each example, or a blank space beneath it, for the copy. The examples can be had separately on cards, in shilling packets. We presume that a further series is to come.

Breweries.—The *Engineer* of February 11th contains plans, sections, and other illustrations of a small modern brewery, which may be usefully consulted by those who desire information on the subject.

* The second lecture of the course, on "The Principles of the Art," was delivered on Thursday evening last. The following is a list of the subsequent lectures:—Monday, Feb. 21, "The Development of Styles." Thursday, Feb. 24, "Thirteenth Century Architecture: Italy." Monday, Feb. 28, "Thirteenth Century Architecture: France." Thursday, March 3, "Thirteenth Century Architecture: England."

* The South Kensington Drawing-book. Under the sanction of the Lords of the Committee of Council on Education. The examples selected from the South Kensington Museum by E. J. Poynter, R.A., Director for Art, Science, and Art Department; and drawn under his superintendence by pupils of the National Art Training School. Blackie & Son: London, Glasgow, Edinburgh, and Dublin.

THE ARCHITECT OF THE LOUVRE AND THE TUILERIES.

DURING the year just closed, an architect of some fame and distinction in his native land of France has passed away comparatively unnoticed. Many persons have not remarked that Lefuel had ceased to be, and many more persons who may have seen his death chronicled only a few weeks ago will not have known how prominent a place he held in the history of modern French architecture. Charles Blanc, the great French art-critic, has devoted over three long columns of the Paris *Temps*,—a serious and well-written and reliable paper, be it observed,—very different, indeed, to the *Figaro* and its fellows,—to the consideration of M. Lefuel's architectural genius. There are, says M. Blanc, two widely different paths to be followed in the pursuit of architecture,—the scientific and the æsthetic; and two architects have flourished in our day in France, who have perfectly represented the two branches,—Duban and Lefuel. Duban had a certain poetic gift; he pondered on the possible moral effect of a fine architectural study; his mind lingered over the subtle connexions between matter and thought, and he saw in architecture not only practical utility, but the eloquent expression of a sentiment. Lefuel, on the contrary, was a man of downright positive turn of mind, and his foremost preoccupation was always on behalf of that which was necessary and commodious,—he was perfectly well informed respecting the qualities of various materials, their relative solidity and weight, and the two most prominent points in a building, in his opinion, were its solidity and its adaptability to the purposes and exigences of life. If Duban committed an architectural fault, it would be likely to be in favouring the beautiful at the expense of the practical; while Lefuel's fault would be in sacrificing the beautiful in favour of the practical.

Lefuel's father was an architect, who had had the management of some important architectural enterprises at Versailles, and the son's tastes naturally turned towards architectural pursuits. Young Lefuel was put in the hands of M. Huyot, an excellent master, who soon found that the love of architecture was innate in his pupil. M. Huyot was a real artist with broad views, who had travelled a great deal and seen a great deal, and whose wanderings in Greece, in Constantinople, in Asia Minor, and in Egypt had given him correct ideas of the architecture of the ancients. He was, it is generally believed, the first in this century to explore the classic ground of Athens.

In 1833 Lefuel, who was then twenty-three years old, competed for the Prix de Rome, but he only obtained the second prize. It was not till 1839, the year when Gounod had the grand prize for music, and when Hébert had the grand prize for painting, that Lefuel had the grand prize for architecture. The French Academy at Rome was then under the directorship of Ingres, who, by the high character of his genius, and the incisive humour of his manner, governed his pupils with a firm hand. Under his direction, the students worked cheerfully, and at the same time seriously and steadily. Lefuel, in particular, seemed gifted with an extraordinary power of will and work. He was somewhat better off, in a pecuniary sense, than his fellow-students, and he made the rooms allotted to him extremely comfortable and even elegant, and as there was no general meeting-room then at the Villa Medicis, the students used to meet by common consent in Lefuel's rooms, and many friendships that lasted a lifetime were cemented there. While Hébert was at Florence studying the early masters, he fell down in the street and broke his leg. Directly Lefuel, who was his intimate friend, heard of this, he started immediately for Florence, and took up his place at his friend's bedside in the Via dei Canzainoli, and finished his architectural work on a wretched little table, utterly unfitted for such uses, and on which he could not dispose the necessary implements. His architectural designs were conspicuous for their correctness and precision; indeed, it was often said that no one surpassed him in these points. At that time, every one was crying up Duban's drawings, in Rome as well as in Paris; and these were certainly extremely effective, and had an irresistible charm, due to the artist's keen imagination and depth of emotional feeling. Lefuel was more sober in his studies, and was content with a perfectly truthful rendering. When once he had reached a rigorous and incomparable correctness in his design, he left his admirers to find poetry in the exactitude of his reproduction. He agreed in spirit with Keats, who said that,—

"Beauty is truth,—truth beauty."

M. Charles Blanc tells us that he spent several hours in examining the drawings Lefuel executed in Rome, Naples, Sicily, and Tuscany. These were all together in a portfolio, and Lefuel had always, during his lifetime, refused to show them, declaring that, for an architect, his early drawings and designs are a means, not an end. These early drawings are, in M. Blanc's opinion, specially fine, and show how intently Lefuel had studied. In copying at Rome the tomb of Sabelli,—a Middle-Age monument erected in the Basilica of Aracœli,—Lefuel had perfectly rendered its character, its delicacy, its refinement. At Naples he thoroughly studied the forms and decorations of the antique vases, and the style of the bronzes found at Herculaneum and Pompeii,—the candelabra, the lamps, tripods, perfume-boxes, drinking-cups, flutes, shells, and musical instruments,—rendering each outline with perfect skill, and indicating the hardness and glitter of the metal. Lefuel reproduced with the utmost exactitude every architectural fragment that he came across. A few strokes of his brush sufficed to give a serpentine curl to a cornice, to give majesty to a palm-leaf; his colour was bold, and even crude at times, but was always correct.

The characteristic features of Lefuel's drawings are their striking truth, and the fact that you do not feel, as you look at them, that the artist has been led astray by his feelings. Contemplating Duban's drawings, you feel instinctively that the man's heart beat over his work; that he chose his moment and his light. Lefuel's drawings, you perceive at once, come from reason. They are the products of a lucid intelligence and indomitable will; a keen and sure observation. They reveal no enthusiasm, no poetry; but they show that such a man would be able to fit a building for its destination, to master the difficulties of soil, to fulfil the conditions imposed upon an architect by the climate, the materials, the customs, and the exigences of a public work. Lefuel was an excellent constructor, a clever engineer, as well as a learned architect.

When he had passed his five years in Rome Lefuel returned to Paris, and opened a studio, where he took in pupils. During five years he devoted himself to private architecture, and it was not till after the Revolution of 1848, that he was called upon to work at the Château of Meudon. After that he was summoned to Fontainebleau, where he built at the right wing of the court called Du Cheval-Blanc, a theatre that is the admiration of all art-critics, who find it perfectly adapted to its purpose,—that of holding a small, and friendly, and intimate audience, accustomed to the utmost elegance and comfort. At Fontainebleau, Lefuel felt himself in congenial surroundings. He had always inclined to the Renaissance school, and his art was based on the study of Roman art. He had never been induced to go back as far as Athenian art, and had never been led to compare Athenian architecture with the travesty of it due to the Roman emperors. It seems odd that the pupil of a master who had studied among, and reproduced the monuments of, Greek art, should have displayed such antagonistic tastes, but the fact is undeniable. Lefuel was all his life thoroughly imbued with the art of the Renaissance, so that when, at the death of Visconti, Lefuel was called upon to become the architect of the Louvre and of the Tuileries, he had nothing to acquire,—nothing to alter in his views of art; he simply passed from Serlio to Philibert Delorme, from Primatice to Pierre Lescot. As architect of the Louvre, he had some difficulties to face. Visconti, in his plans, had given the new buildings only one story, in order that the old Louvre, which had two stories, might remain pre-eminent. Napoleon III. however, had other ideas, and in the joining of the Tuileries to the Louvre wanted to make a handsome effect, which would also be a useful effect as regards the many needs of the empire. Lefuel had not the strength of mind nor the necessary authority to prevent the changes in Visconti's plans, and he had to considerably modify the original designs. He consented to give the new building two stories; then he consented to the undue particularisation of the corner pavilions; he consented, in fact, to overcharge the new buildings with ornamentation that, in the minds of many connoisseurs, spoiled the general effect of the splendid quadrangle that was defaced by the terrible episodes of 1871.

One must judge the architect of the Louvre according to the work he himself conceived, and which was not imposed by his Imperial director, and M. Charles Blanc lays special stress upon the beauty of the vaulted galleries beneath the Louvre library that lead from the Palais Royal square to the Carrousel square. These are the works of a master-spirit in architecture, as is also the magnificent staircase leading to the private room of the minister of finance, the beauty of which cannot be seen by the public, for the staircase is only trodden by eager claimants whose souls, sunk in the keen desire for some special favours, are lost to art. On the other hand, every one can cross the Place du Carrousel, and every one is grateful to the architect who opened a roadway from the Place du Carrousel to the Quays. Lefuel was always at his best when there were any difficulties, and he was especially pleased at the work he achieved in giving unity and charm to the hitherto disconnected bits of splendid architecture.

Lefuel put his mark also upon the "Pavillon de Flore," and its symmetry and its consecutiveness, were due to his genius.

It would be impossible to fully describe all Lefuel's work in the Louvre and at the Tuileries. Says M. Charles Blanc:—"To construct a riding-school and stables conspicuous for their magnificence and comfort in one of the southern courts of the palace,—to decorate the official and private rooms with pomp and splendour and grace,—to contrive ornaments for doorways and for mirrors, arabesques for panels, rosaces for centre-pieces, corner-ornaments for ceilings,—to design garlands of acanthus-leaves for columns of doorways,—to temper the brilliancy of the colours and the gilding by the most delicate of neutral tints,—to deck a black marble mantelpiece with silver ornamentation,—to make a fireplace a work of art,—all this was but child's play to this indefatigable artist whose early studies had given him an inexhaustible supply of resources and examples."

Some of Lefuel's best works remain comparatively unknown to the public; the private hotel of the Foulds in the Faubourg-Saint-Honoré; the splendid monumental mantelpiece, executed after Lefuel's designs, in the ducal palace at Florence; the private hotel of Mr. Riggs in the Rue Murillo; and other examples, are by no means familiar except to the appreciative art-connoisseur of Paris. To the general public, Lefuel's name is and will remain known, principally, as the man who stepped into Visconti's place as architect of the Louvre and the Tuileries.

ENGLAND UNDER WATER.

STATEMENT AS TO THE PRESSURE OF THE WIND.

THE Severn, the Wye, the Dee, the Trent, the Soar, the Don, and the Avon are all reported in heavy flood. The valleys of the Vyrnwy and Upper Severn, where the numerous affluents are all torrential in their nature, present the appearance of an inland sea, the flood, fed by the melted snow from the hills, being the highest known for thirteen years. At Shrewsbury, on the 10th of February, the water of the Severn had risen to 16 ft. above the ordinary winter level. The low-lying parts of Sheffield are under water, and the valley of the Don, and its affluents from the moors, are turned into a series of lakes. At Sileby the principal street has been converted into a river of from 2 ft. to 3 ft. deep. The courses of many rivers are now only indicated by the parapets of their bridges; and at Overton and at Bangor the bridges have been washed away. At 1·40 p.m., on the 10th, the force of the wind recorded on the Observatory at Greenwich was 26 lb. to the square foot, or a quarter of a ton on the surface of a moderately-sized window. The Great North of Scotland Line has been again blocked by snow, while the telegraph has failed to report the state of the Caledonian and Deeside railways.

In Middlesex, the valley of the Lea has been converted into a vast lake. Large tracts of land are under water in Essex. The marshes between Norwich and Yarmouth are heavily flooded. The falling off of the tide has relieved South London from alarm; but Sir J. Bazalgette has published observations of the height of the Thames taken at fifteen different points, which show that the unprecedented height of 5 ft. above Trinity high-water mark was attained

on the 18th ult. in different parts of the river. This great flood was accompanied by wind, as to the stated pressure of which we have a word or two to say.

On the 2nd of March, according to a correspondent of the *Times*, the position of the moon in perigee, or at the smallest distance from the earth, will tend to produce, as far as the influence of that planet alone is concerned, a higher tide than that of the 18th of January. Of course, the conditions of wind and of barometer cannot now be predicted. And it is to be hoped that by that time the floods may have run down from the upper Thames. But, in this case, we are forewarned, and ought to be forearmed.

The point, however, to which the builder will be likely to give the most anxious attention is the statement made by Sir J. W. Bazalgette as to the extraordinary pressure attained by the wind on the 18th of January last. This is stated by the engineer of the Metropolitan Board of Works as 51·5 lb. per square foot, or almost exactly double the pressure remarked as extraordinary at Greenwich in the fierce gale of the 10th of February. It is of essential importance to the London builder that the details should be given on which that calculation is based. According to Smeaton's table, which we take to be the ordinary authority as to wind pressure, "a hurricane that tears up trees, carries buildings, &c., before it," blows with a velocity of 100 miles per hour, and exerts a pressure of 49·2 lb. per square foot. The wind on the 18th of January was keen and strong, but we do not think it attained anything like the violence of a hurricane. In fact, Sir J. W. Bazalgette says that the horizontal movement of the wind on that day was at the rate of 860 miles *per diem*. This is equal to 35·83 miles per hour. And the pressure due to that velocity as given by Smeaton is less than one-eighth part of the pressure given by Sir J. W. Bazalgette. In Smeaton's table we find:—

Velocity per Hour. Miles.	Velocity per Second. Feet.	Pressure per Square Foot. lb.
30	44·01	4·429
35	51·34	6·027
40	58·68	7·873
100	146·70	49·20

It is, of course, possible that a wind which averaged a movement of 860 miles in twenty-four hours may have blown at the rate of 100 miles per hour during a portion of that time, but in that case we do not see the use of putting in the lower rate, which is calculated only to mislead. The figures look as if the velocity in feet per second had been erroneously quoted as pounds of pressure per square foot. We hope that the eminent engineer in question will relieve the anxiety of the architects and builders of London on this score. If they have to provide against hurricane pressure, the sooner they are made fully aware of the fact the better. On February 10th the wind was measured at an observatory in Surrey at 1,150 miles in twenty-four hours, but there were no signs of a pressure as high as 50 lb. per superficial foot; and, until better informed, we take leave to doubt that such a pressure has been exerted in London during the recent gales.

DECORATIVE ART IN GERMANY.

THE amount of information, more or less valuable, on the subject of decorative art, that of late years the press and the publishers on both sides of the Atlantic have been forced to inflict on the reading public, has still left many of us in doubt as to what is really meant by decorative art. The question of true decoration is, indeed, one that a very few correctly understand, but all seem to agree that in their decorative powers the artists of nearly all past ages are to be looked upon as our masters. Led by competent directors, it was soon seen that a return could alone be made to the early years of the history of modern art, to the period which is generally understood as the Renaissance; and Italy and the Italian masters of the fifteenth century, with their fecund symbolism and wealth of decorative motives, were from that moment to receive the recognition and admiration which had so long been thoughtlessly denied to them. The suggestiveness of the Florentine, the Paduan, and the Venetian masters opened a field of inquiry and of study which is still far from being exhausted,—indeed, in England is yet only in its first stage, confined as is the practical acquaintance with its beauty to one or two highly-cultivated artists.

Of the same period, and still strictly under the same influences, the work of the Early German and Flemish schools offers a certainly no less suggestive field of study to those who may elect to pursue what we now call decorative art as a means of acquiring originality by the sole mode in which originality can be attained,—by a proper acquaintance with the thoughts and works of their predecessors. Early German art can be little studied out of Germany, and though we may have in our National Gallery, and in a few rare instances in private hands, remarkable specimens of the early art of beyond the Rhine and its derivative schools, it is alone in a representative collection of such works that their essentially decorative character can be appreciated. Such a collection exists at the "Old Pinakothek" at Munich. Here with ease may be followed, in all its origin and development, the school which, in itself to remain so sterile, was to produce such noble descendants as those who built up in later generations the Flemish and Dutch schools, and those two most brilliant of the stars of the Renaissance, Dürer and Holbein.

Far from familiar as is the story of German art, any discussion of its little-suspected antiquity would lead us far afield; still less could we afford to enter into the vexed question of the priority of the German Renaissance over that of Italy. How many even competent scholars are there who are aware that at the moment Cimabue was toiling painfully to break down the last barriers that divided Greek art from the study of nature, there was living and working, in the distant forests of Bohemia, Thomas van Matina, who, deprived of all communication with Italy, was a painter of no mean talent, and that he stood not alone, supported as he was by brethren such as Theodoric von Prag, Nicholas Wurmser, and Kanz, patient continuators of the traditions of the Byzantine school, and whose rare works are alone to be met with at Vienna, at Karlstein, and at Prague.* Unrepresented as these early German artists are, at Munich little more than the reference due to their historical importance is necessary. Still less represented in the picture-gallery is the art of the German *schilder*, the earliest artists of all, who commenced by being painters of bucklers or shields (the old German word for painter was *schilder*, still preserved in Dutch, and retained in our English word *shield*), or their successors of the eighth century, of whom we have literary mention as being limners of historical subjects. It is not in the Pinakothek, though situated in the capital of Bavaria, that we can expect to find any specimens of the art of glass-painting which the monks of the Tegernsee invented, so we are told, in the tenth century, and the proof of whose skill can be seen in the neighbouring cathedral of Augsburg.

With the efforts of the Cologne school, if not in its earliest, in some of its most characteristic productions, one may become familiar from the examples in the Munich Pinakothek. At Cologne, art and industry early took a marked development; and painting and sculpture, the delicate art of the jeweller, the goldsmith, the enameller, the caster and chiseller, the glass-painter, the weaver, and the armourer, made the hallowed home of "the three kings" famous through Europe. The Guild of Painters existed at an early date at Cologne; the Cologne school, in fact, commences to show its power from the middle of the twelfth century, and for 400 years it was to retain its fame. Of the works of the earliest distinguished representant of the school, Meister Wilhelm, the Munich Pinakothek possesses several interesting specimens, as also works in his school, of which there exist so many examples scattered through Europe.† All these are, from a decorative point of view, worthy of study, for the artists spare no wealth of beauty of design in the delicate Gothic surroundings of the Virgin in these symbolic scenes of the Nativity, the Annunciation, the Visitation, the Marriage of St. Joseph, or the Death of the Blessed Mother; all the exquisite traditions of the living school of industrial arts which existed contemporaneously at Cologne are introduced into these pictures with a minuteness and a care which render these panels invaluable from an historical and artistic point of view. Here we see and can study the symbolism of the decorative art of the period, and of the suggestive meaning and value of so much of which we, in the present day, have in so large a measure lost sight.

It is no mystic conception that these painters represent; these Virgins are not the delicate, divine creations of the seraphic Fra Angelico; they are Virgins who wear begemmed crowns in the design of which the loving artist has laid out his utmost skill and invention; Virgins on whom are draped the richest stuffs, the design of artists inspired with the magnificence of the East; Virgins whose quiet chamber, in which the angel, crystal-mounted wand in hand, comes to announce to them their destiny as they read piously a glowingly-illuminated missal, is a sanctuary of calm, a wealth of decorative design, with artfully-considered niches, well-planned window-recesses, wall-coverings and ceilings, choice furniture, rare flowers, rarer faïence, rich vases and cups, mystic mirrors, roundelled windows, marble columns delicately-carved architectural details, gems of colour harmoniously balanced. With the "primitive" masters these traditions are invariable as they are in the works again of Meister Stephan, the greatest master of the Cologne school, and his numerous scholars, well represented at the Munich Pinakothek; all from this special point of view are of the utmost interest, and worthy of study by the architect and the decorative designer, whether he designs for the admirers of the early periods, or whether he acknowledges the beauty of the sixteenth or seventeenth century, or even of the eighteenth century. Meister Stephan's famous triptych in the cathedral of Cologne, Dürer, in his "Journey to the Netherlands" (1521), specially mentions. In his journal, Dürer inscribes the expenditure of two "*weisspfennige*," "*um die Tafel aufzusperren, die Meister Steffen zu Köln gemacht hat.*" This picture is painted in oil; the date 1410 inscribed on it would give its painter the priority of this invention over Van Eyck were it not now well known that the practice is of far greater antiquity.

From the active centre of Cologne were to branch out east and west two other schools,—one in Germany, the other in Flanders,—the latter to be raised to eminence in the hands of the Van Eycks, the influence of whose teachings was not alone to act on, and be acted upon by, Italy, but on the very Cologne school from which they derived their lessons. In the Flemish school, again, the traditions of decorative design are perpetuated, and the works of its artists, apart from their artistic and ideal beauty, are encyclopædias of suggestive design. Of the Van Eycks, the Pinakothek shows no original work; but of their almost superior contemporary, the ideal and careful Memling, there is here more than one exquisite example in which the wealth of architectural and decorative beauty is marvellous.* Freer in their action than in the confined space of the manuscript which these artists had been accustomed to illuminate (Memling's work in the Grimani code at Venice is familiar, since its reproduction, to all art-lovers), even the more insignificant artists' works show the extreme care which they delighted to bestow on the scenes, whether interior or exterior,—landscape in their hands is treated with scarcely less attention, a fact not sufficiently generally noticed,—a deep mine of ornamental designs. Among the pictures of the Pinakothek is a rare and careful work, hung somewhat out of the way, by Geraert Horneband, interesting to the English visitor, as Horneband, an illuminator of Ghent, was for many years employed by Henry VIII.† Roger van der Weyden, or Roger of Bruges, is represented at Munich by an important series of beautiful pictures, in more than one of which,

* See Waagen's "History of German Art." There are critics who claim the early Christian art of Germany as purely an original creation, unaffected as it was by any classical influence, and who urge warmly that the exquisitely beautiful Irish illuminations of the sixth century, executed, so it is generally stated, under Greek influence, are far more Saxon and German than Oriental.—See Demmin, "Recherches sur la Priorité de la Renaissance de l'Art Allemand."

† At all times these works have been prized. Walpole, in his "Anecdotes of Painting," quotes from an office-book of the time of Henry VIII., an entry concerning "a depicted table of Colonia." See chap. iv.

* Of the authenticity of these Memlings great doubt exists; that is, of their being the work of Memling, of Bruges: several artists bore this name. Certain it is, as Viardot has pointed out, that the Bruges artist worked in the Byzantine process of *tempera* half a century after the Van Eycks painted in oil, the material in which the Pinakothek Memlings are executed.

† Walpole, in his "Anecdotes," quotes an item from an office-book *temp.* Henry VIII., of a sum given to Horneband. Later on also he states that the artist's sister came to England, where she died. The epitaph from her tomb in Fulham Church is given at length by Walpole, chap. iv.

apart from their ideal beauty, the architect and designer will find many suggestive motives. The doubtful original of Hugo van der Goes is none the less instructive for its decorative beauty, its wealth of draperies, and accessories; features equally remarkable in the exquisite work of the painter and engraver, Lucas van Leyden and of the Meister von Werden, known to print-collectors as Israel van Meckenen, a rare specimen of whose work we possess in our National Gallery, through the generosity of the Prince Consort.

Eastwards the influence of the Cologne school can be also traced. Martin Schœngauer, the Maso Finiguerra of Germany, still continues the ornamental traditions of his predecessors; as for the other painters of the school of Ulm, they are admirably shown at Munich. The too-little known artist, Martin Schaffner, is worthily represented in a number of works of great decorative beauty in which the Gothic traditions are charmingly mingled with the new influences of the Renaissance. Of the three other schools in Germany, those of Augsburg, of Dresden, and of Nuremberg, the Pinakothek contains a number of representative works. Of the least important of these schools, that of Dresden, its one master, Lucas Cranach, the contemporary and, as an industrious wood-engraver the rival of Albert Dürer, is well represented. Of his pictures, the most interesting are the small life-like portraits of Luther and Melancthon (dated 1532) and the sturdy Elector Frederick of Saxony. Cranach is represented by several other works, all impressed with that peculiar talent, so thoroughly German, so thoroughly in accord with the spirit of the period which brought forth the Reformation. How largely collections of pictures are supplied with "originals" may be judged from a fact mentioned by Scuchardt in his Life of Cranach; his pictures and those of his pupils were sold periodically in *schoeks*, by sixties, just like eggs.

Of the Early German schools, it remains now merely to mention the artists of the great neighbouring centres,—Augsburg and Nuremberg,—represented by the two only really great names of German art, Dürer and Holbein. Of Dürer's master, Wohlgemüth (by whom our National Gallery possesses no work), the Pinakothek contains several excellent pictures. Under the teachings of this worthy artist,—a portrait of whom, by Dürer, is in the collection,—and amidst the Gothic gloom of the picturesque old city in which he had been brought up, Dürer was only later on to be influenced by the throbs of the Renaissance to affect, at such an earlier age, his great contemporary Holbein in the more southern city of Augsburg, with its direct intercourse with Italy. At Munich Dürer is scarcely represented as one would wish to see the great artist. It is true we have a number of his works, among them the famous "Four Evangelists" which he presented to his native city as "a memento of his modest talent." The portraits offer the most interest, especially one of the old goldsmith, his father; but the choicest of all is the portrait of himself when he was twenty-eight years of age. The divine, serene face is the ideal, yet the true portrait of the great painter, the still more exquisite engraver of those rare works with which we are all so familiar. After all, it is as an engraver that Dürer is great, and this portrait is far more the patient production of the artist familiar with the burin and the point than the painter in whose hands the brush is the most facile tool. In Holbein we find the true painter. Under the skilful direction of his father, by whom there are here several works in which the decorative element takes a large place, Holbein was to take rapidly the position he occupies in the history of art, a worthy representant of the new and individual spirit of the Renaissance. Holbein is here represented under several of his aspects, but the fecundity of his invention, the care of his early works, are all surpassed by his power as a portrait-painter, and from this point of view our debt of gratitude to his industry can never be paid. In the Pinakothek this side of Holbein's genius is, however, but poorly shown, though to the English visitor there will be an interest in the portrait of Sir Bryan Tuke, bluff King Hal's treasurer, in his black gown and gold chain; as also in the portrait of Derick Borne, one of the famous Easterling Merchants of old London.

With the disappearance of Holbein and Dürer, German art sinks slowly to its death. Holbein quits Germany too young to leave behind him any pupils, such as in Dürer's case continue the decorative traditions of his art; its power was alone to exist as long as the pupils lived who studied under him. Painters and designers such as Aldegrever and Hans Burgkmair, the author of many noble woodcuts (represented here by a picture which evinces his study of Carpaccio); Altdorfer, who, in his pictures, shows his admiration of the architecture of the Italian Renaissance in his gorgeously marble inlaid palaces; Hans Schaufelein, Georg Pencz, and many others, all represented here at Munich. With the death of Dürer his school was dispersed; some of his pupils became Flemings, some Italians; Schooreek, after being a Fleming, is influenced by Italy; Pencz, even in Dürer's life-time, settled in Rome; Van Calcar is fascinated by Titian, Rottenhammer by Tintoret; Bartholomew Beham dies in Italy, and so the list might be continued; with them the traditions of the early art die out. The rest of the history of German art may be told in a few words; the artists of the next century are driven from their country by the horrors of the Thirty Years' War, the influence of which was long to be felt in Germany; the Ostades and the Netschers rank among the Dutch painters; Heinrich Roos is better known as Rosa di Tivoli; Lely (the only one of these artists unrepresented at Munich) and Kneller were to people our country-houses with their graceful portraits and charming beauties. In Germany itself three painters alone from the death of Dürer and his school are worthy of mention,—Denner, the most patient "niggler" that ever held brush in hand; the prolific Dietrich; and Raphael Mengs, half an Italian. Such, till we reach the romantic revival of Cornelius and his contemporaries,—a movement again struck with sterility,—is the story of German art, which may be faithfully followed in the "Old Pinakothek" of Munich, the far greater interest of which rests in its superb collection of masterpieces by Rubens, its treasures of the Dutch school, and its even choicer examples of the rarest art of all, the work of Rembrandt.

SOME ARTISTIC BOOKS FROM ABROAD.

AT this season last year our readers will remember that we presented them with a summary of some of the more noteworthy French artistic works then recently published; the wealth of beauty and information displayed might have suggested that the season was an exceptional one, but this year the works are not only equal in interest, but seem, indeed, perhaps superior. Where to commence in such an enumeration is a difficult task, when all are so inviting; one is at a loss which to praise more highly, the industry of the authors or the devotion of the publishers and their staffs, and their shrewd business tact in producing works such as our own great firms timidly reject or produce alone on conditions which prevent the possibility of emulation on the part either of the book-writing or book-reading public.

In commencing our enumeration by naming Madame De Witt's "Chronicles of Froissart," we may feel sure of arousing with English readers no accusation of invidious notice, for the chatty old chronicler of the doughty deeds of our Black Prince is a classic author as much in England as he is in France, while the regal manner in which the volume is illustrated places it high among the artistic works of the year. The quaint language of the writer, who, not unjustly, has been termed by Hallam the Livy of France, has long placed his picturesque pages at a disadvantage with those who wot not of the mysteries of "black letter," but buried in these pages are passages of the most brilliant description, and information which, in these days when the interest in the past is being shown in so many ways, is of the most valuable and instructive nature. Madame de Witt, the worthy daughter of the historian Guizot, deserves our gratitude for having brought into a more readable shape our old friend Froissart, to whom the publishers have given a worthy accompaniment of illustrations gathered from the most authentic sources, manuscripts and museums. The period with which Froissart deals is of more than peculiar interest, and of those choice artistic years ranging over the fourteenth century, the old canon, a poet, a knight at the same time, and a chronicler who foreshadows the feats of the "correspondents" of our times, tells us what is most amusing of the gay scenes, the marriages, the tilts, and ceremonies of which he was witness.

The chronicle of Froissart's successor, Philippe de Commynes, is, as befits such a writer (he has been called the first French historian), a more serious publication. Here, so far from the text being rendered into modern language, the learned world will see for the first time the text of Commynes in all its integrity. As for the illustrations, which render this history essentially an artistic work, they possess all the gravity befitting the chronicle of the court which Scott has so vividly described in his "Quentin Durward."

From those two most familiar of French chroniclers, Froissart and Commynes, the leap is somewhat serious to Egypt; such transitions in the present days of archæological research we are, however, accustomed to make. Egypt should chronologically have opened our article, but old Froissart and his contemporary have taken the *pas*. In our review last year we had occasion to refer to the appearance of the first volume of the magnificent work on Egypt by Georg Ebers, translated by his friend and companion, M. Maspero. The second volume of "Egypte" (from Cairo to Philæ), is no less interesting than the preceding part, in which we were shown the Delta, the Egypt of the Greeks and Arabs, and many other features of the country which has witnessed some of the greatest scenes in the history of the world. In this second volume we are introduced by the author into the heart of hieratic Egypt, which innumerable generations of Pharaohs have covered with the gigantic monuments which, even now that we have been told so much about them, scarcely less strike us with awe and curiosity. The work is illustrated in a princely manner.

The third and latest volume of Duruy's "Histoire des Romains" deserves mention among the artistic works, for the large number of its archæologically interesting illustrations.

To the "Spain" of Simons, illustrated by Professor Wagner, of Munich, a work which appears simultaneously in German and in French, a place is due among the artistic books, picturing as it does in text and illustrations the wonderful peninsula, with its architectural monuments,—its picturesque present scarcely less interesting than its historic past.

Spain irresistibly recalls the civilisation and refinement of the East; among the new books of the season the richly-illustrated work of M. de Beaumont, "Les Ornemens de la Perse," merits artistically a high place, the more so at a moment when the question of "decorative art" is being hotly discussed. M. de Beaumont is a warm admirer of the decorative art of the East; he has boldly expressed his opinion that from a decorative point of view our art is advancing on a false path. Apart from the professional interest which the book is intended to and will no doubt arouse, the work will, we imagine, be popular with the ladies, to whom it will afford a fund of decorative suggestions. The present volume, devoted to the ornamental art of Persia, is only the first of a series to show us the brilliant charms of the art of Arabia, of Japan, of China, of Turkey, of Byzantium, and of Venice. Among the books treating of decorative art, let us also mention "Dessins de Décoration de nos principaux Maîtres," chosen by M. Guichard, of the Union Centrale, from the recent exhibition of old masters' drawings at the French Museum of Decorative Arts; to many readers the volume will serve as an admirable guide to the models held in honour by our neighbours.

Among the artistic works which the season has brought forth, M. Yriarte's "Florence" will take a brilliant position; the subject chosen by the author of "Venise,"—to which this volume serves as a *pendant*,—was one in itself not alone calculated to inspire its author, but to ensure a welcome from the cultivated public. We hope to give to this book separate and full consideration before long.

The industry of M. Havard has long been a source of delight to the artistic public of both hemispheres. This season the author, who has led his readers with such fascinating charm into the apparently unpromising regions of the Zuyder Zee and its dead cities, through picturesque Holland, who introduced us to the mysteries of delft pottery, and who has revealed such a large amount of information about the Dutch painters, has still something more to tell us of his favourite country. "Hollande au Vol d'Oiseau" worthily satisfies the exigencies of its title, a bird's-eye view of the country of Rembrandt. In these pages the author rapidly summarises his impressions of the characteristic spots he places before us in the illustrations of M. Lalanne, whose skill is deserving of praise in

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conveying the familiar character of the architecture in the scenes which he has chosen.

The industrious little kingdom of Holland instinctively suggests the great figure of Rembrandt and his ceaseless activity. Of the many works written on Rembrandt, none surely will have a right to be considered with more respect than Charles Blanc's princely work "L'Œuvre complet de Rembrandt," a series of reproductions of the *entire* engraved work (353 pieces) of the master; such a perfect collection exists in no single case in any of the rich "cabinets" of Paris, London, Oxford, Vienna, or Amsterdam. The illustrations are accompanied by a "catalogue raisonné," and many interesting particulars concerning the life of the great painter.

The work by M. Muntz on "Raphael: sa Vie, son Œuvre, et son Temps," is an interesting volume on a scarcely less suggestive subject. To such a book as this, like that on Rembrandt, the little more than hasty mention that can here be accorded to a notice of its chief features is ill-calculated to do justice to its merits. The inspired master, whose familiar and melancholy figure illumined his epoch for so short a moment, is here studied in the society and surroundings in which were passed the few days measured out to him by destiny, and in his works scattered among the museums and collections of the world. Need we add that the work is profusely illustrated,—a novel feature, by the side of the famous works, being the reproduction of a large number of original sketches by the master.

To Fromentin as a writer and as a painter (*Fromentin, peintre et écrivain*), M. Louis Gonze, the director of the *Gazette des Beaux Arts*, has devoted some brilliant and feeling pages, which will appeal with peculiar interest to the more refined public in France and abroad, who know how high stood Fromentin's power as a writer, and whose familiarity with his painted works will lead them to know how essentially he was an artist in the broadest sense of the word.

The work of M. Sensier on the life and works of Millet has long been impatiently awaited by the admirers of the sad, sweet painter of French country life. The work, written by a dear and appreciative friend of the artist, is a faithful simple chronicle of the struggling, upright, and laborious existence of this indefatigable toiler.

To a very different order of ideas belongs the learned work which Lieutenant Delaporte has published on Cambodian architecture, the result of a mission entrusted to him by the French Government to examine the masses of mysterious ruins that lie hidden under the rank tropical vegetation of centuries that has covered these remains of long-past splendour. The work which the enthusiastic lieutenant has produced, richly illustrated as it is, is one the interest of which merits a more lengthy description than can be just now afforded to it. We have before now spoken at some length of Cambodian art, the existence of which was first revealed to the world at the Paris Exhibition of 1878.

To many readers, both in France and abroad, the Abbé Drioux's excellent work, "Les Fêtes Chrétiennes," will come as an acceptable book, illustrated as it is by numerous engravings. The great festivals of the Roman Catholic Church is a subject which, as can be understood, is suggestive from many points of view; the worthy abbé has admirably availed himself of his position, and has made his work as attractive as it is instructive.

Our enumeration of the artistic works published in France must forcibly be drawn to a close, and no space has been left us to speak of a number of other works scarcely less worthy of mention; a word of congratulation, however, to Firmin Didot, who has commenced the republication of that ever-young and popular author, Scott; no proof could be more satisfactory than the fact that no fewer than 15,000 copies of "Ivanhoe," the first of the series, were sold within a few days of its issue.

Mrs. Brassey has reaped golden laurels not alone in her own land, but in France and Germany, in both of which countries translations of her amusing and charmingly illustrated works take their place among the most attractive of the season's books. Mrs. Brassey's works, familiar as is the name of the authoress at home, may worthily be ranked among the artistic books from abroad. Another equally popular countrywoman of ours merits also mention by her appearance in both the French and German lists of new year's books,—Miss Kate Greenaway.

Germany has published also a number of works meriting mention among the artistic books from abroad: to more than one of these we have already referred. Hirth, of Munich, publishes a new volume of his praiseworthy "Formenschatz,"—well-chosen reproductions of the decorative works of the famous masters of the Renaissance, a work the French edition of which is known as "L'Art Pratique," our English edition bearing the somewhat foreign title of "Art Treasure" (*sic*). "The German Room of the Renaissance" ("Das Deutsche Zimmer der Renaissance"), to which casual reference has already been made in these pages, is now completed; the illustrations and counsels will be welcome to the student of the decorative art of the past. Von Falke's "Hellas und Rom," illustrated as it is by artists such as Alma Tadema and other equally archæologically-learned scholars, merits, as a "picture-book" alone, high praise; the text is no less meritorious. Wurzbach's "French Painters of the Eighteenth Century" ("Die Französischen Maler des 18 Jahrhunderts"); Kretschmer's "Modern Costume" ("Die Trachten der Völker"); another work on costume (*Trachten*), by Hottenroth, are all admirable practical works. Lübke's "Rafael-Werk," Oncker's "Allgemeine Geschichte," a truly monumental history of humanity, its artistic and moral development; among the professional works, the "Opern-Cyklus," in the *foyer* of the Vienna Opera House, by Schwind, are a few of the many works that merit mention.

Italy produces among artistic works only a very small and unimportant list, mostly well-executed translations of standard works which have already gained their reputation in England, France, and Germany.

After the discussion that has recently been revived concerning the extraordinary cheapness of foreign in comparison with English books, it might not be out of place to enter somewhat into the matter. The conditions which regulate the book-producing and the book-reading public at home and abroad differ, however, so widely, that a just appreciation of the question is difficult to an extreme; but this much it is impossible to deny, that for the mass of information afforded, the wealth of illustration, and the general quality of the "get up," France, it is perhaps humiliating to have to admit, stands foremost among the book-publishing nations of the world, and in no point more than in the artistic books which are published at Paris. Fortunate, and professionally favoured, indeed, is the reader who is able to profit with facility by the stores of erudition which are laid before him each succeeding season by the foreign publishers.

THE GERMAN NATIONAL MONUMENT ON THE NIEDERWALD, RHINE.

WHEN the war of 1870-71 had been concluded, and a new peace secured after the sanguinary struggle, a desire became manifest to commemorate the eventful times through which the German people had just passed, by a monument of German art dedicated to the whole nation. Erected by the contemporaries of that stirring period from a feeling of gratitude, it is to announce to coming generations the unanimous rising of the various German races, the national regeneration of the people cemented on the battlefields of France, and the reconstruction of a united and powerful German empire. The word which first gave expression to the slumbering thought found an echo everywhere; and it was soon agreed that the national monument ought to be placed where north and south meet, and on the banks of the Rhine, the river hallowed both by song and tradition as an especially German river, and at a spot,—on a height of the Niederwald, opposite to where the Nahe flows into the Rhine,—where the eye ranges far and wide over the hills and dales which had been first threatened by the foeman, as far as the ramparts of the Vosges, which now define the extended boundary of the German empire.

In the enthusiasm of the moment, artists were at once called upon to compete in carrying out an ideal problem which is not often submitted for solution in the history of a nation. But formative art is not always able to interpret at once rightly the bold flights of fancy, and it may thus be easily understood that popular aspiration was not immediately put into tangible shape. It required two competitions to select the master to whose hand the work was to be confided. What our readers find illustrated in these pages is the outcome of a third design, which at last satisfied popular wishes.

The monument rises energetically on a broad and solid basis to a suitable height, its colossal proportions imparting to it a striking effect. It is surmounted by a youthful Germania, standing before a throne, her hair, wreathed with oak-leaves, descending over her shoulders, her figure draped in a mantle embroidered with eagles. Her left hand rests on a drawn sword, decked with laurels; the right holds high the newly-acquired imperial crown. In accordance with the Germania are the two figures at the projecting socles of the base, representing Peace and War,—a winged youth in armour, who, sword in the right hand, raises the trumpet to his lips to call the warriors to battle; and a genius in festive drapery, carrying the horn of plenty and the olive-branch of peace.

On the band extending on the base between these figures the verses of the "Watch on the Rhine" are engraved, and above this a living watch on the Rhine, a crowd of German soldiers, in relief, ready for the field, grouped round the mounted figures of King William and his lieutenants. Below the frieze are placed the figures of Old Father Rhine and his daughter, the Mosel, who receives from the elder figure, now relieved from his long guardianship, the alarm horn, with the admonition to keep good watch on the new frontier of the empire. The imperial eagle, crowning the centre arch of the broad socle relief, the coats-of-arms of the German States surrounding the lowest member of the upper pedestal, the laurel-wreaths at its corners, and the Iron Cross placed between them, as well as inscription tablets on the remaining fields, complete the adornment of the monument. Above the eagle and below the Germania the principal inscription on the monument runs thus:—

"IN REMEMBRANCE
OF THE UNANIMOUS
VICTORIOUS RISING
OF THE GERMAN PEOPLE,
AND
OF THE RESTORATION
OF THE GERMAN EMPIRE,
1870-1871."

WALL PAINTINGS IN PARIS.

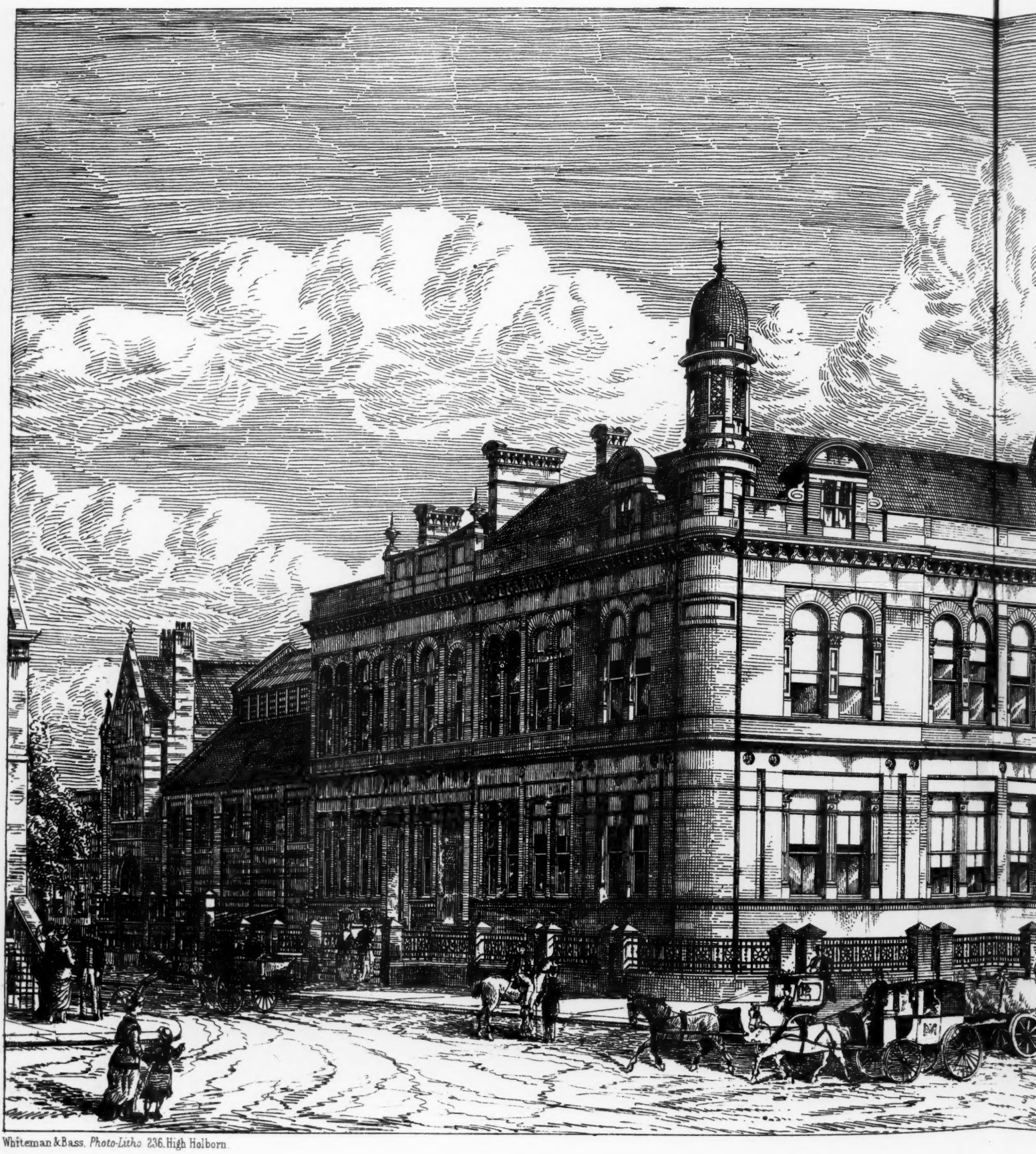
THE PALAIS BOURBON.

ON the 7th of February last, the architect to this palace, in which the Chamber of Deputies holds its sittings, reported to a committee convened for the purpose, and presided over by M. Gambetta, that the wall-paintings by Eugene Delacroix in the library of the palace were threatened with destruction. The walls appear to have subsided, and the cracks which have been occasioned in the masonry will, it is feared, seriously damage the pictures. The committee have appointed a Commission, consisting of deputies, public officers, and artists, with a view to taking immediate steps to preserve the frescoes. The Commission includes the names of M. Turquet, Under Secretary of State for Fine Arts, M. Barbet de Jouy, curator of the Museum of the Louvre; Étienne Arago, curator of the Luxembourg; Antonin Proust and Lockroy, deputies; M. Ballu, architect to the Hôtel de Ville; Charles Garnier, architect; Charles Blanc, member of the Academy of Fine Arts; Vaudremer, architect, member of the Institute; Burty, art critic; Andrieu, artist, pupil of Delacroix; Galland, professor at the École des Beaux Arts; the three questors, MM. Madier de Montjau, de Mahy, and Margoine; the president of the Audit Commission, M. Noël Parfait; and M. de Jolly, architect to the Palais Bourbon.

Useful Application of Steam Fire-Engines. — In consequence of the recent very severe frost, the dwelling-houses on Wimbledon Common were deprived of the water supply. To remedy this, the Southwark and Vauxhall Water Company instructed Messrs. Shand, Mason, & Co., to send one of their largest steam fire-engines to pump from one main by means of hose to another main beyond the obstruction. The engine was on Friday, the 4th of February, placed near the Rose and Crown, and in conjunction with two similar steam fire-engines the property of the water company, and constructed by the same firm, a plentiful supply was provided for the inhabitants, who otherwise would have been without water.

ZUM ANDENKEN
AN DIE EINMUETHIGE
SIEGREICHE ERHEBUNG
DES DEUTSCHEN VOLKES
UND
AN DIE WIEDERAUFRICHTUNG
DES DEUTSCHEN REICHES
1870 - 1871

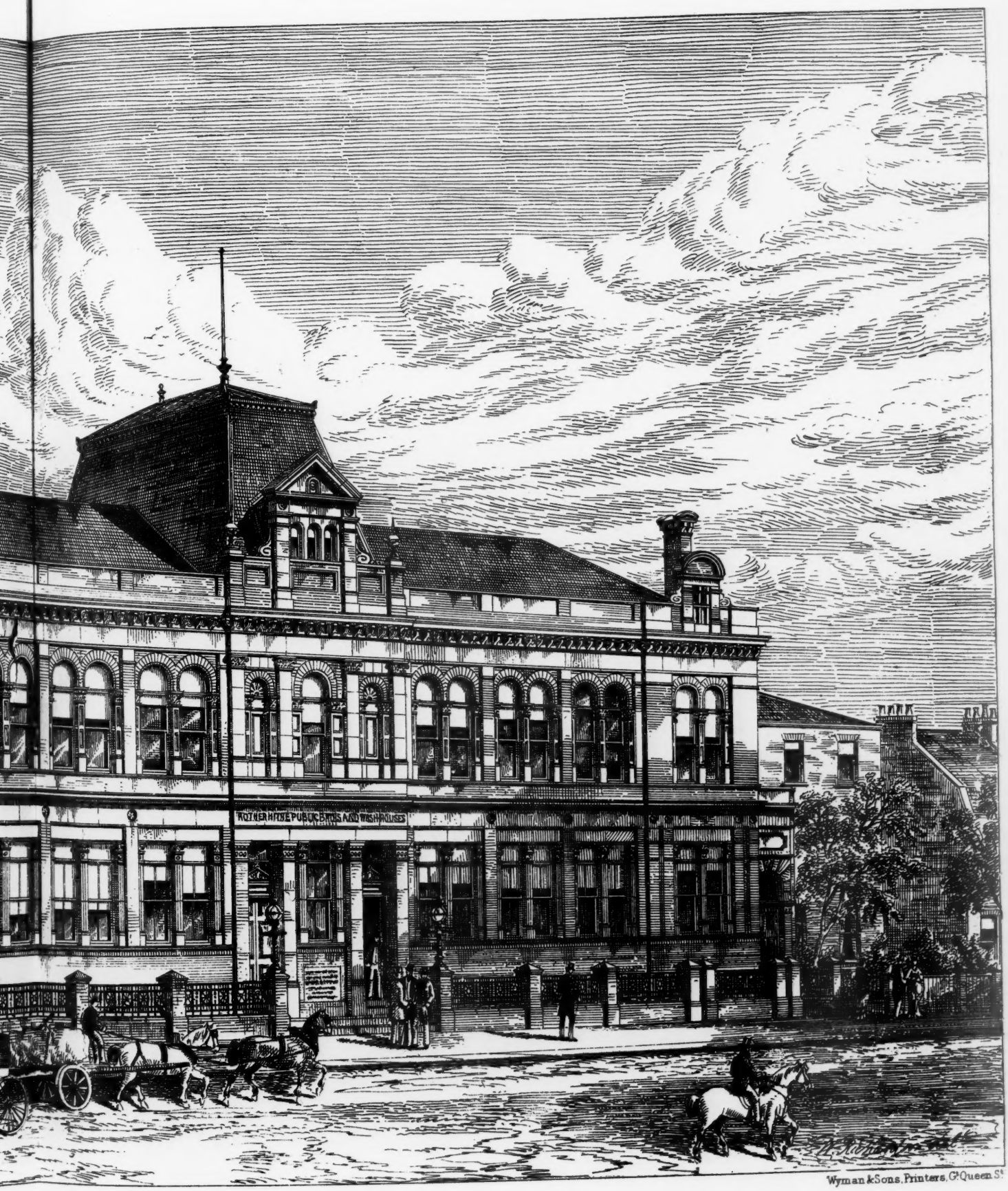
THE GERMAN NATIONAL MONUMENT ON THE NIEDERWALD, NEAR RÜDESHEIM, ON THE RHINE.



Whiteman & Bass, *Photo-Litho* 236, High Holborn.

ROTHERHITHE PUBLIC BATHS A

MESSRS. GEO. ELKINGTON & SON,



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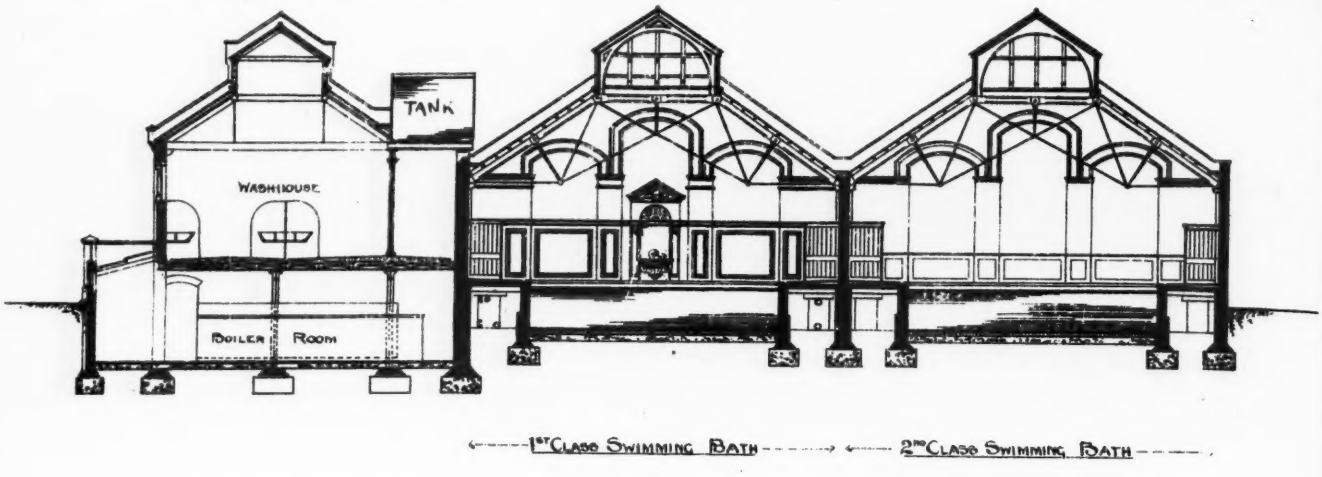
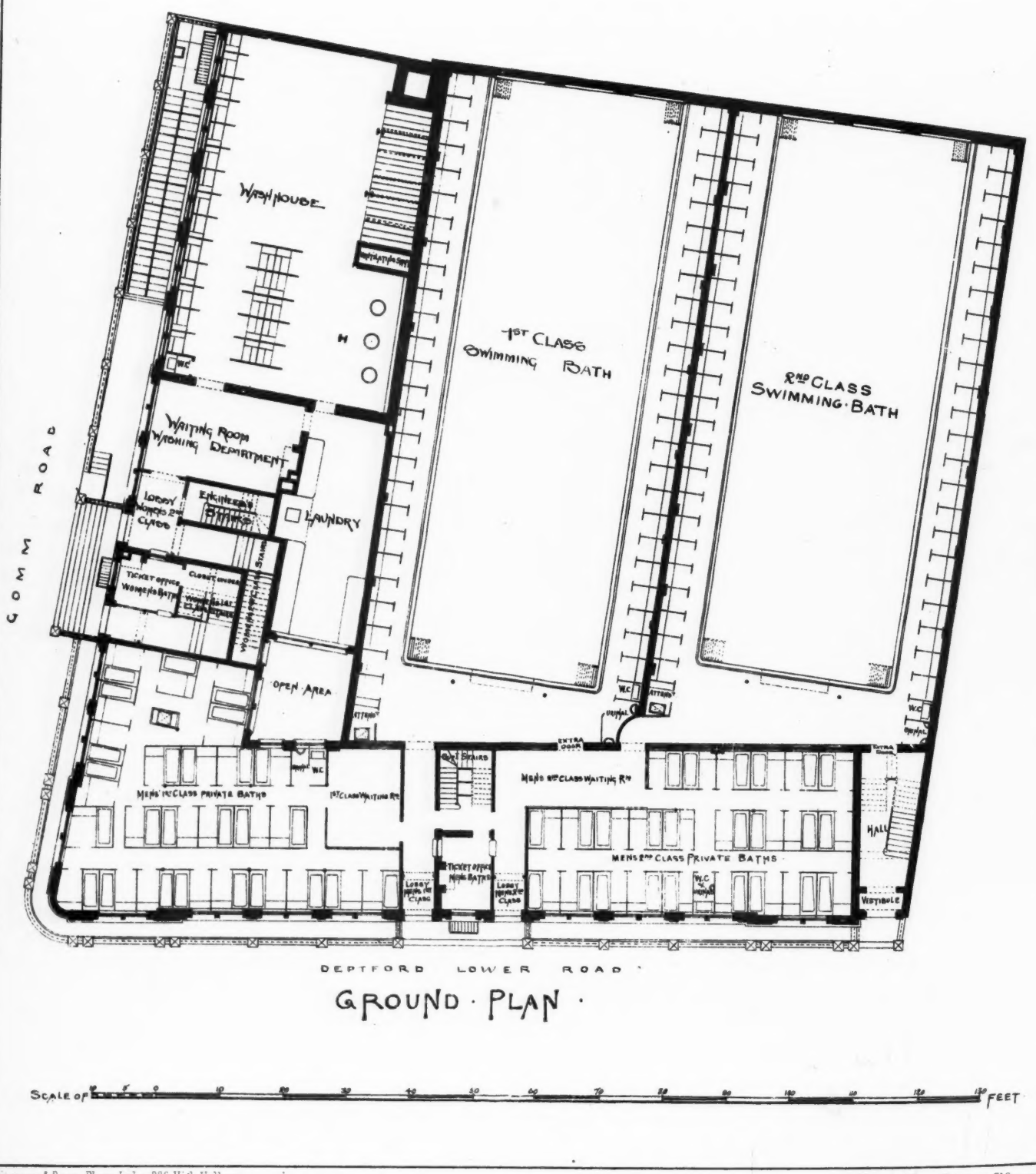
BATHS AND WASHHOUSES.

GTON & SON, ARCHITECTS.



TRANSVERSE SECTION



GROUND PLAN

Whiteman & Bass, *Photo-Litho* 236, High Holborn

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ROTHERHITHE BATHS AND WASHHOUSES.

STREET ARCHITECTURE: "THE FOUNDERS' ARMS," HOLLAND STREET, BLACKFRIARS.

MR. WILLIAM C. BANKS, ARCHITECT.

Whiteman & Bass *Photo-Litho* 236 High Holborn

Wyman & Sons, Printers, G^t Queen S^t

THE FOUNDERS' ARMS, HOLLAND-STREET, BLACKFRIARS.

THE house we have illustrated is being rebuilt for Messrs. Daun & Vallentin, of Lambeth Distillery. The site of this house is a little to the eastward of the site of the Cross which formerly stood on the "Upper Ground" in the famous Paris Garden, facing the Old Paris Garden-lane, and adjoins Messrs. Rennie's foundry, which mainly occupies the site of this once favourite resort of revellers in the Elizabethan period, not excluding "Good Queen Bess" herself. A little further to the eastward stood the old Widflete Mill, and contiguous thereto the "Folken Ine," the resort of Shakspeare and his players; next to this stood the house where Sir Christopher Wren lived when he was building St. Paul's, and on the opposite side (where Messrs. Epps's cocoa-manufactory now stands) was the Mill-pond, while the site of the Paris Garden Stairs is absorbed in the wharf on the river frontage of the foundry.

The new building of the Founders' Arms is being carried out by Messrs. W. B. Downs & Co., of Southwark, from the designs and under the supervision of Mr. Wm. C. Banks, architect, of Gracechurch-street. The front is to be faced with Pickwell's (Hull) bricks, with Portland stone dressings, both brick and stonework being freely carved. The pilasters around the shop-front are of polished Dalbeattie granite. The upper portions of the several sashes are to be of stained glass.

THE ROTHERHITHE BATHS AND WASHHOUSES.

THE Rotherhithe Public Baths and Washhouses are erected at the corner of Deptford Lower-road and Gomm-road, adjoining the Metropolitan Fire Brigade Station and Southwark Park.

The first-class swimming-bath is 90 ft. by 30 ft., the depth varying from 5 ft. 6 in. to 3 ft. 6 in. The second-class bath is 84 ft. in length, and of similar width and depth. The sides are lined with white-glazed tiles, and the bottom, with white-glazed bricks, the first-class bath having in addition an ornamental border of blue and white tiles. The flooring round the swimming-baths is of slate, with moulded curb and sunk slate channel and gratings to prevent dirty water passing into the baths.

The dressing-boxes are of deal, painted and varnished. The ends of the swimming-bath buildings (shown in section) are partially lined with glazed ornamental tiles in panels.

The roof principals are of iron, the lantern-lights (and all skylights throughout) being glazed on Rendle's patent system. Extra doorways for ingress and egress are provided in case either of the baths should be utilised in winter for a gymnasium and other public purposes authorised by Act of Parliament.

The private baths, sixty-five in number, are fitted with porcelain baths supplied by Mr. John Finch, of Buckingham-street, Adelphi, and with "Busby's" patent valves, each bath-room being enclosed with slate divisions, the first-class being enamelled of a light-green. The floors are paved entirely with slate.

The washhouse is fitted up with twenty-four galvanised-iron compartments, each having three troughs, for hot and cold water and steam, with three wringing-machines or hydro-extractors, and twenty drying-horses in a chamber heated by the furnace in the boiler-room beneath. The laundry adjoining is fitted with the usual appliances.

At the north end is a separate stone staircase, leading to the Board-room and offices for the use of the Commissioners, the same being available for other parochial purposes. The Board-room is 41 ft. by 24 ft. 6 in., and 18 ft. high. It has a boarded ceiling and hammer-beam principals, all the internal woodwork to this department being stained and varnished. The superintendent's apartments, with entrance from the main road, adjoin.

The engineer's apartments are also on the first floor, with separate entrance from the Gomm-road.

In the basement are the boiler-room and stokery (under the washhouse), with three Cornish boilers, each 24 ft. long by 6 ft. diameter; engine-room, engineer's workshop, coal-store, and house-laundry, for washing towels, &c., used in the establishment, fitted with a complete washing-apparatus, soaking-tank, washing and wringing machines driven by steam-power, rinsing-trough, and drying-closet. There is a complete system of subway, in which all the mains and wastes are conveyed, so as to be open at all times for inspection. Towel-lifts are provided to each department. The remainder of the basement contains considerable storage for various purposes.

The floors are constructed with rolled iron joists and cement concrete throughout, except to wash-house, which has brick arches. The several staircases are of stone. The lobbies and corridor are paved with Minton's tiles.

The w.c.'s are all fitted with Bostel's apparatus.

Externally the buildings are faced with white Suffolk bricks, Portland stone to the principal cornices and doorways, and terra cotta is employed to a considerable extent in pilasters, capitals, panels, trusses, and other ornamental work.

The buildings are erected from the designs, and under the superintendence of, Messrs. G. Elkington & Son, of 95, Cannon-street, E.C. The contractor for the building works is Mr. William Shepherd, of 101, Bermondsey New-road, the amount of his contract being 19,735*l*.

The contractors for the engineering works are Messrs. J. & F. May, whose contract amounts to 3,260*l*. Mr. Lawson is the clerk of the works.

TELEGRAPHY AND THE WEATHER.

IT will be hard if one useful result is not obtained in consequence of the interruptions of telegraphic communication by the recent storms. The present mode of suspending the wires is one fitted only for the infancy of science. It was borrowed from those estimable, but not scientifically educated, members of society, the washerwomen. No doubt at some remote period, long after the invention of soap, or of the use of clean linen, the first person who strung a line between two posts, and fixed wet linen on it with a forked peg to dry, instead of simply making use of a convenient hedge, deserved well of society. But there is no reason that we should honour the work of that inventor, when his very name is forgotten, by a too conservative adherence to his method, especially when we have quite another object in view. When Wheatstone and his colleagues were first making their elegant experiments as to the means of transmitting signals by electricity, it was quite natural that they should hang up their wires. The means of supporting them by insulators were both ingenious and simple. They answered the end of the moment, and served to keep up the connexion between one place and another while electricians were endeavouring to perfect the more delicate parts of the system.

The case now, however, is quite changed. On the one hand, our eyes are opened to the essentially clumsy, dangerous, and temporary character of the plan of supporting wires on wooden posts. That method is liable to every objection, except that it serves for ready application as a makeshift. In a thunder-storm it is unreliable. In a snow-storm it is most likely to break down. In a high wind it is sure to fail somewhere. In any case of popular disquiet or of hostile movement, at the very moment when telegraphic communication is of the utmost value is certain to be interrupted. The exposed wires offer an irresistible temptation. Over long miles of lonely country they are at the mercy of any one who can use an axe, a saw, or a file. They force themselves on the attention of the rioter or of the invader. In a case of railway accident, when the services of the telegraph intervene between life and death, the chances are more than even that the stoppage on the line will include the stoppage of the telegraphic communication. Apart from all the dangers of malicious or unforeseen stoppage is the consideration that the perishable nature of the posts is such as to involve replacement within a certain time. To this it has to be added that the aërial wires form a sensible and a rapidly-increasing addition to the terror of locomotion. We can speak from personal experience of the sensation produced by the falling of a telegraph wire on the roof of a railway-carriage in motion. Those are happy who can speak of such an experience without further cause of remembrance. About the time of which we speak, the driver of a locomotive had his head cut clean off in a moment by a wire that had been disarranged and was hanging across the line of railway. In London and other great towns the constant increase in the number of wires stretched through the air has already been productive of serious misfortunes, and in a few years, if this is allowed to go on, and as the fittings naturally decay and get out of order, the mischief and loss of life will become intolerable.

For all this danger, inefficiency, and ultimate wasteful cost, there is a very simple remedy. It is remarkable that, so long after we have put a girdle round the earth, under the water of the ocean, we should have adhered to the childish method of exposing our land lines to court every kind of danger in the most obvious way. There is no reason, no excuse, for adherence to the plan, not even that of economy. Telegraphists tell us that it is as easy, and far cheaper, to lay a subterranean as or than a submarine wire. A group of wires, each insulated, each wrapped in hemp, laid together side by side, again served with hemp, protected, if necessary, by iron wire, and covered with an impervious cement, can be laid anywhere, and will be safe when once deposited a foot or two below the ground. Such a cable will offer no point of attack to either storm, accident, or outrage. It will remain uninjured for many years. In case of any accident or defect, it will always be easy for the managers to ascertain exactly at what part of the line they have to look. In the mean time, there would be no cost of watching or of maintenance; there would be no possibility of damage to life or limb from an accident to post or to wire. When the public interest is thus all on one side of the question, and when even the true interest of the proprietors of the telegraphic lines is, in the long run, the same, it is a case in which public opinion ought to be fully enlightened, and in which full course should be given to a reform which it is rather late in the day to demand. The electric telegraph is not the only one of the scientific inventions of the day of which England was the cradle, but which have not shaken themselves clear of their swaddling-clothes with us, while in other countries they have made marked advance towards maturity.

It is to be observed that the Postmaster-General has pleaded against the claim for the better protection of the telegraphs *in formâ pauperis*. The cost of the change, he says, will be so great as to put it out of the question. No doubt, if it were proposed at once to replace all the aërial by subterranean wires, this reply would hold good. But, looked at a little more closely, it will be seen that in the long run the balance of economy will be on the other side. Snow, be it remembered, is only one of the atmospheric foes of the telegraphs. We wonder what has been the cost of the hurricanes of the 7th and 10th of February! or of that which rages as we write. The adoption of the principle is one thing, and the timely adaptation of the details is another. It is possible to combine the two. No one would be so crude as to suggest the immediate replacement of one set of wires by another. But those persons will, in our opinion, only increase the expense of a change which must, sooner or later, become imperative, who shut their eyes to its ultimate necessity, on the ground of shunning immediate outlay. It would be far wiser to collect statistics as to the cost of the rough weather of the past few weeks, than merely to stand aghast at a cost which will, sooner or later, have to be faced.

Apropos of this subject, we must call attention to the recent most interesting supposed discovery of the existence of electric tides in the electric charge of the earth, which have been thought to be indicated by observations on the earth currents of the telegraphic lines. They are said closely to follow the position of the moon. We have yet to await the acceptance of this view by electricians; but we have long since expressed the opinion that the cause of changes of weather was telluric rather than atmospheric, and that it was to be sought in the earth itself. Nor have we doubted that the effect of the relative positions of the planets of our system, regarded as electro magnets, was one of the points deserving the most careful study, as affecting both barometric and thermometric changes. It seems as if the present year would throw some light on this most interesting subject. The existence, if proved, of an electric tide will be of the utmost value, from this point of view. And we are not without hopes that we shall arrive at the cause of that unusual wave of cold, coming from the south and west, of which we have felt such striking evidence this season. For the thermometer to have been much lower in South Wales than it was in Central England, is an anomalous and as yet

unexplained fact. As such we cannot doubt that its explanation would throw valuable light on the true theory of the weather.

In fact, this idea of an electric tide supplies just the one link which was wanting for the formation of an hypothesis which may hereafter be wrought out into a philosophic theory. We are aware of the existence of maximum and minimum points in the magnetism of the earth. We may speak of this as a magnetic tide. The maximum intensity is attained at three p.m., and there is a secondary maximum at five p.m. The minima are at nine p.m. and five a.m. Again, we have a maximum and minimum of the heat received from the sun, which we suppose may be taken at from noon to three a.m. for the former, and at about half an hour before sunrise for the latter. To these we may now have to add the electric ebb and flow, of which the maximum and minimum follow more or less closely the arrival of the moon on the meridian. And here comes in a probable result of the extraordinary range of the moon in latitude. If the influences of that planet, due to its position in longitude, determine an electric flood-tide, there is good reason to suppose that a movement of this flood in latitude will be effected in the same way. If this be so, we can at once see why no two years should have a like series of seasons, and we may anticipate an explanation of the endless variety of the weather.

EXHIBITION OF LIGHTING, HEATING, AND VENTILATING APPLIANCES.

ALEXANDRA PALACE.

THIS exhibition, though a meagre one, includes some things which are very good, notably the slow combustion or "Norwich" stoves of Messrs. Barnard, Bishop, & Barnards, which successfully aim at combining economy of fuel with efficiency of heating power. They are all good and suitable in design, and are exhibited in action, burning anthracite smokeless coal. This kind of fuel appears to be somewhat cheaper per ton than the "best Wallsend," and it is claimed for it that "two tons will do the work of three of the ordinary coal." If this be so, and it can be obtained in sufficiently large quantities, the motive of economy should go far to render less smoky the atmosphere of London and other large towns. Three colliery companies (the Gwaun-cae-Gurwen, the Pantyffynon, and the Pontyberem) are exhibitors of this fuel. Messrs. Barnard also exhibit a well-made supermantel of Sequoia wood, which has the warm tone, without the odour, of cedar, and is likely to be much used for panelling and furniture. The same firm also show a variety of hot-air stoves and cooking-ranges. Messrs. Brown & Green have a good display of their "Prize Medal" kitcheners and "Gem" portable cooking-stoves, besides slow combustion ventilating stoves. All the exhibits of this firm have merits which have been fully recognised. Messrs. Ewart & Son show their "Empress" smoke-cure and ventilator, and a bath fitted with their "Crown" boiler. Mr. James Howorth, of Farnley, has a good display of Archimedean screw and centrifugal ventilators, sunburners, &c., which have been much in requisition. Messrs. C. Kite & Co., exhibit their patent roof-ventilators (now being much used for stables and cow-sheds), as well as their chimney-cap. Mr. William Roberts, of Burry Port, Carmarthenshire, shows his new registered grate with upright bars, especially designed for burning anthracite coal. Messrs. Shanks & Co., of Lambeth-hill, exhibit their baths and lavatories, with hot and cold water apparatus. Messrs. Jones & Willis show their "Hesperus" lamps in various forms, for burning paraffin. Boyle's air-pump ventilators; Stevens's exhaust cowl and drawer ventilator; a patent window-sash opened and closed by toothed rack and pinion, shown by the Keighley Timber and Saw Mills Company; Gillingham's radiating heat generators, shown by the Patent Tube Company, Euston-road; Ritchie's patent gas-stoves; Armstead's patent "Clibanus" cylinder for setting coppers; and Adams's window openers and fasteners are among the exhibits coming strictly within the scope of the exhibition. Among the miscellaneous exhibits, we may mention Braithwaite's valveless syphon for water-closet cisterns.

Mr. Thomas W. Rumble, M.I.C.E., chief engineer to the Southwark and Vauxhall Water Company, has been admitted a Fellow of the Royal Society, Edinburgh.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the eighth ordinary meeting of the session, held on Monday evening, the 14th of February, Mr. John Whichcord, F.S.A., president, in the chair, the secretary read a letter from Professor A. Resanoff, Hon. and Cor. Member, announcing the decease, on the 6th of February, 1881, of Professor Constantin Thon, Hon. and Cor. Member, Imperial Academy of Fine Arts, St. Petersburg. The deceased Professor was in his eighty-seventh year.

THE ROYAL GOLD MEDAL, 1881.

The secretary, having read By-law LXXVI., the President announced that, pursuant to the terms of the said by-law, the Council proposed to submit to her Majesty the Queen the name of George Godwin, F.R.S., F.S.A., past vice-president, as the Royal Gold Medallist for the current year.

THE EXISTING LAW OF LIGHT AND AIR.

Notice has been given by T. Roger Smith, Fellow, that he will bring forward the question of the pressure of "The Existing Law of Light and Air" upon architectural practitioners, and offer suggestions as to the possibility of rendering the law less oppressive; also as to the part which the Royal Institute of British Architects might take in forming public opinion and promoting legislation on the subject.

SANITARY SCIENCE IN ITS RELATION TO CIVIL ARCHITECTURE.

The discussion, adjourned from the 17th of January, of the paper by Mr. E. C. Robins, was preceded by a description of a system adopted at the City Guilds Technical College, to be erected in Tabernacle-row, and which resulted from a conference between E. N. Clifton, Fellow, Mr. J. L. Bacon, the Professors, and Mr. Robins. The description is as follows:—

It is an example of heating and ventilating by propulsion. The heating surfaces are placed in a common central chamber, with fresh air driven over them by two powerful fans and distributed by means of horizontal channels through the whole building, connected by means of rising shafts to each floor and room, and delivering into the upper part of the same. High-pressure wrought-iron small-bore piping is to be used, of which the heating-chamber contains some 3,500 superficial feet. The boilers are adjacent,—and so is the three-horse power engine required for driving the fans, which are 7 ft. in diameter with blades 3 ft. 6 in. across; 100 revolutions a minute are made, delivering the air at the rate of 15 ft. per second, but it is made to enter the rooms at the rate of 3 ft. or 4 ft., and not exceeding 6 ft. or 8 ft. per second. Taking the air from the outside at a mean winter temperature of 39°, 1,640,000 cubic feet of air can be driven through the building per hour,—each fan blowing one half of the above quantity. The air is driven into the hot chamber, entering at the bottom, and is compelled by a plate-iron division to pass up and down through the heating surface before reaching the main distributing channels, which pass under the flooring right and left, graduated in area according to the number and size of the upcast shafts they have to serve. The iron gratings through which the warm air is forced into the rooms are sufficiently large to permit of a current of 3 ft. or 4 ft. per second, and are fitted with valves to regulate the supply. The reason for admitting the air near the ceiling is to avoid the unpleasantness of heated currents of air passing over the body or face. For the exit of the foul air, shafts are let into the walls running through to the roof, having extract openings into the same near the floor and as far as possible from the fresh-air inlets. The central chimney-shaft from the furnace in the basement rises to the height of 120 ft., and is used for drawing off the foul gases and vapours from the great laboratory and experimental closets in the various chemical departments. There are above a dozen large stink-closets to be evacuated once every minute, from which collectively 52,320 cubic feet of air are drawn off per hour. And there are forty-seven draught-tubes from the various operation benches, which withdraw 141,000 cubic feet per hour. The draught-chimney extracts 196,420 cubic feet per hour in summer, and 269,845 cubic feet in winter. And this is achieved by causing the extract-flues to descend to the base of the shaft, which being 120 ft. high, carries the air up with a great draught. The quantity of fresh air admitted to the laboratory only in summer is 160,200 cubic feet, and in the winter 217,525 cubic feet per hour. The velocity in the branch flues is 5 ft. per second, the descending flue 5 ft. 6 in., and the upcast-shaft 6 ft. per second. In summer the fans drive in cold fresh air by the shafts, the pipes of the heating-chamber not being at work as in the winter; and it can be admitted at the top or the bottom of the rooms at pleasure. The extract-shafts, which in winter are at the bottom, in summer are at the top or near the ceiling. In all seasons the fume closets and suction-shafts of operating tables in the laboratory and elsewhere are evacuated by the descending shaft, to which the fumes are led by the floor-channels to the base of the chimney-shaft.

Mr. Henry Dawson, Fellow, having referred to the drainage of buildings, continued on the subjects of warming and ventilation. He said: Ventilation may, I think, for our present purpose, be most simply and comprehensively defined as the operation which secures a free and constant, but gentle, circulation of air through the interior of our dwellings, or of any apartment occupied by human beings, and by which the exhalations from their lungs and bodies, as well as the products of combustion from artificial lights, are regularly removed by the pressure of a constant inflow of pure fresh air from the external atmosphere. I cannot agree with Mr. Robins's classification of the methods of ventilation, which he describes as either "natural" or "scientific," because I hold that the system which is most scientific is the most natural: that is, it is the simplest and truest application of natural laws. I submit that the two distinctive methods in use would be more correctly defined as "natural" and "mechanical ventilation." By the former method, the air of a room is set and kept in motion through the simple process of its rarefaction by some heating medium near the floor, whether it be an open fire, or that given off by hot-water pipes, and which cause it to ascend to the ceiling with the heated products of respiration and combustion to be carried off by extraction flues, and as a necessary consequence, compelling a corresponding inflow of fresh air into the lower stratum of the room to be warmed in its turn, and to ascend and escape as before. Whereas by the latter method, or "mechanical ventilation," the fresh external air, after being warmed, is propelled by some artificial means into the room, and the vitiated air is extracted by the exhaustive process of revolving fans, or a steam-blast, or the suction of a powerful furnace-flue. I may say that I am no advocate for the mechanical or artificial method, because I think it is only suited to extraordinary buildings, and that the instances of its success are rare, doubtless from the difficulties in ensuring an equable temperature and velocity of the air. We shall all agree, I suppose, that the chief difficulty we have to surmount, even in this "natural" system, is to change the air by continuous circulation without violent currents or unpleasant cold draughts; and in discussing the means which are best adapted to prevent these frequent concomitants of ventilation, we have at once to consider the available methods of warming. Unquestionably, the "open blazing fire" is the most cheerful and genial, and therefore, notwithstanding its wastefulness, it will probably continue to be in demand as indispensable in our British homes. But, although it must be admitted that its past use in the majority of our dwellings has been attended by chilling draughts from the windows and doors, I cannot agree with Mr. Robins that these draughts "are inseparable from the use of open fires;" on the contrary, I maintain that it is quite feasible to avoid them by giving to each room its separate supply of fresh external air, which shall be sufficient both for the purposes of combustion and the recuperation of the internal atmosphere for respiration, and so render imperceptible any ingress of cold air through the window crevices. But then it is indispensable that this fresh-air supply shall be capable of being warmed (when required) to a moderate temperature before it enters the room; and this can easily be accomplished in ordinarily-sized sitting-rooms by using the heat from the open firegrate itself,—all that is needed is a slight modification in the usual register-stove having fireclay linings to the grate, a warm-air chamber formed round the back and sides of the stove, through the bottom of which are properly-proportioned inlets for fresh air, and at the top on each side is an outlet flue for the warm air, which is made to enter the room about 2 ft. 6 in. from the floor, and at such distance on each side of the fireplace as may be found most convenient. I may add that the warm-air stove, &c., such as I have here described, and which I have used in considerable numbers, was originally made and arranged from my own design, because I found that those which were offered me were rather too complicated, costly, or clumsy. For the completion of the ventilation of ordinary dwelling-rooms, as well as schools and like buildings, which shall convey the hotter vitiated air as it ascends to the ceiling, I have made still further use of the waste heat from the open fire by carrying up two vertical extraction flues on each side of the smoke flue, about 11 in. by 9 in., all made in single pieces of hard burned terra-cotta, 2 ft. wide and 2 ft. 8 in. long. These flues have openings just below the cornice, fitted with Boyle's self-acting valves, and their extracting power may frequently be increased by conducting the heat from gas-lights direct into them by double tubes through the thickness of the floors. The adoption of this simple method of warming and ventilation in my practice has been attended with good success, not only in dwelling-houses,

but even on a larger scale in halls and schools, and in one church where I really was allowed my own way. While treating of the interior of our dwelling-houses, I would urge very strongly that one great *desideratum* in most of even our modern houses is a due supply of fresh warm air at moderate temperature, through the hall, staircase, and corridors, at all times during the winter months. Seeing that these intersecting channels of the house are the feeders of air to the rooms, and especially to the bedrooms at night, I think nothing can contribute more to the health of the inmates, particularly those who are liable to catarrh, than such a constant renewal of the internal atmosphere, and it also prevents cold draughts through the doors of sitting-rooms. I have been particularly struck with the system adopted at the Long Room at the Custom House by Mr. Boyle. I must give my testimony that his air-pump ventilators are really so constructed as to act like air-pumps. They do exhaust the air in the top, and my impression is that they are most useful things, and may be made very valuable for the extraction of foul air from large buildings. To say, however, as is the custom, that there is never any down-draught is saying too much, and when I went up there to examine the system, I found that the outlet tubes, instead of being, as described, —carried up straight from the ceiling right up through the roof,—have a bend in them, and in that almost horizontal bend is placed a contrivance for the purpose of checking any little down-draught, and there is also a little receptacle for soot. As to the admission of fresh air by vertical tubes, it is made available in large halls, where high enough, no doubt with success. I believe Mr. Robins states that he considers it particularly suited to a room with an open fireplace, and from that opinion I must entirely dissent. I think there can scarcely be anything worse than a room with an open fireplace into which cold air is admitted by a tube of that sort. I think so for this reason, that my own conviction, scientifically, has been quite confirmed by experience in two instances. At the particular request of clients (against my advice) the system was tried, and in both cases it most ignominiously failed. It failed, as I said it would, from the fact that the cold air,—unless the room is at least 20 ft. in height,—has a rapid upward direction to the ceiling, and is sure to descend again on the heads of the persons in the room, more especially if there is a large open fireplace. When this system of Tobin's was loudly praised, and referred to in the Rooms of the Society of Arts, I went there within a few days after, and saw that the system was being tried there by means of open windows. Poor Mr. Le Neve Foster was then there, and I said to him, "What do you say about this new means of ventilating your room. What do you think of the ventilators?" "Oh!" he said, "Confound them all. Ever since these things have been put in, I have had nothing but rheumatism and sciatica." He told me he had moved from one side of the room to the other, to escape the current, but it was, he said, impossible to do so. The instances where, by request, I have put it in force, have been attended with the same complaint. Does it not seem palpable that to go and thrust columns of cold air up to the ceiling (of course, with the view of purifying the atmosphere of the room) is a course that is unscientific and altogether bad, especially when you reflect that this air is brought down to the level of the lungs, to be breathed by persons who have already expired it? Therefore I look upon it as a most imperfect system anywhere. In very large halls, and even in churches, sometimes it may be introduced with impunity, or with no great harm; but I do submit that the more natural system of bringing in the fresh air at the bottom and carrying it over such a heating medium as hot-water pipes, is a far more scientific, natural, and healthy plan. With regard to the Custom House, I found that the tubes (about 6 ft. from the floor) were covered over with ledgers. I asked them why this was. "Because we feel a draught," was the reply.*

Wirksworth Church, Derbyshire. — A three-light Munich stained-glass window, representing the subject of the Good Shepherd, has just been erected in this church.

* To be continued.

THE SANITARY WORK OF AN ARCHITECT.*

In every well-planned system of drainage, the architect will so arrange that, by means of manholes, the entire length of the drain and its branches shall be easily accessible; so that, in case of need, a brush may be passed from end to end without disturbing the floors of the building or opening up the ground.

It was but a short time since I was conversing with a friend upon sanitary matters, when he told me with much satisfaction that he had recently had his house entirely re-drained. He said he had been put to so much expense formerly that he determined to take out the miserable little 6-in. pipe-drain, which was always getting stopped, and put in a good 9-in. pipe-drain throughout. He was considerably astonished when I told him that probably the last state of that drain would be worse than the first. It is, indeed, extraordinary that the practice of making drains as large as possible, instead of as small as may be necessary for efficient working, should have continued as long as it has. The only possible reasoning must be, —"Every drain is bound to choke sooner or later, and the larger the pipe the longer it will take before it requires clearing." Although what I say must be known to a great many, perhaps most of you, I feel perfectly sure that there are some here to whom it never occurred, and who were never taught that the smaller the pipe the less the friction, *the greater the hydraulic pressure the greater the velocity*, and, consequently, the less chance there is of any obstruction taking place. Although I told you I was taught disconnexion to a certain extent, I was also taught (and this was by a local surveyor) that an ordinary medium-sized dwelling-house required a 9-in. drain. This question of the size of drains and sewers is so important, and is still so greatly neglected, that I wish very strongly to impress upon you the necessity for fully understanding it, and appreciating the evils and absurdities that are consequent upon its neglect. To carry off a small quantity of water quickly a small pipe must be used. The greater the proportion of the wetted perimeter to the volume of water to be discharged the greater the resistance. By wetted perimeter is meant that portion of the drain actually in contact with the water. There are several simple formulæ for calculating the velocity and discharge of water through pipes. These you will find in all the text-books. It is humiliating to think of, but it is nevertheless true, that in London there are about 150 miles of sewers of deposits evolving enormous volumes of foul gases. This is simply because the very principle we are considering was either not understood or was entirely neglected by those who originally constructed these sewers. Dr. Carpenter says,— "See that the sewer of deposit is altered in its character, and that it be made self-cleansing. Strike at the root of the evil, instead of transferring the mischief to some other place. Slow movement allows of chemical change with the evolution of gaseous matter. Self-cleansing sewers will not allow this process to take place; if, therefore, there is a smell from a sewer there is something wrong in its construction, and the engineer who manages or constructed it is to blame."

To return to our house drainage. Let us take the case of a moderate-sized house with twelve inmates. Say that they use 40 gallons of water per head per diem, which is, of course, a very liberal allowance. This gives 480 gallons to pass through the drain in twenty-four hours; at an inclination of 1 in 60 this quantity of water will pass through a 6-inch pipe in about ninety-five seconds. At an inclination of 1 in 90 a 9-inch pipe running full will discharge in round numbers 980,000 gallons in twenty-four hours, or sufficient to drain a town with a population of over 20,000. If a pipe becomes choked it is generally owing to its being too large, not too small, or to faulty laying or construction.

Mistakes are frequently made by *scanning* books of reference instead of *studying* them; for instance, the young architect or builder looks for the proper inclination for pipes of various sizes, and he finds "for 6-inch pipes a grade of 1 in 60." But he fails to observe that this calculation is based upon the assumption that the pipe is running half full. Now in ordinary dwelling-houses this is hardly ever the case; indeed, so small is the volume that in actual practice I find 1 in 30 none too much to give a drain, or as the workmen better understand it, 4 in. in 10 ft.

Two very interesting experiments have been made in the London sewers. The first was in a sewer 5 ft. 6 in. high by 3 ft. 6 in. wide. In the bottom of this sewer a 12 in. pipe was laid, 560 ft. in length; a head wall was built at the upper end of this pipe so that all the sewage had to pass through the pipe. The whole area drained was about 44 acres (built area). The velocity in the pipe was found to be four and a half times greater than on the bed of the old sewer. The pipe contained no deposit, and during rain, stones could be heard rattling through it. The force of the water issuing from the pipe kept the bottom of the old sewer perfectly clear for about 12 ft. below its mouth. From this point bricks and stones began to be deposited, and farther on sand, mud, and other refuse to the depth of several inches. The pipe was rarely observed to be more than half full at its head. It was found that the sum of the cross sections of the house-drains delivering into this half-full 12 in. pipe was equal to a circle 30 ft. in diameter. The second experiment was in a sewer which took the drainage from 1,200 average-sized London houses, the area occupied being 43 acres of paved or covered surface. The sewer was 3 ft. wide, and had a sectional area of 15 ft., with an average fall of 1 in 118. The solid deposit from the 1,200 houses accumulated to the amount of 6,000 cubic feet per month (222 cartloads). A 15-inch pipe placed in this sewer, with an inclination of 1 in 153, kept perfectly clear of deposits. The average flow from each house was about 51 gallons per day, and apart from rainfall, the 1,200 houses could have been drained by a 5-inch pipe, and it was estimated that at that time (about thirty years ago) the mere house drainage of the whole of London might be discharged through a sewer 3 ft. in diameter.

Now, although what I have told you are ascertained facts, still both house-drains and sewers are daily being constructed in direct opposition to what have been proved to be the best methods. This is due to want of knowledge: 1st, on the part of architects and builders; 2nd, on the part of borough and local surveyors; and 3rd, mainly on the part of district boards of works, to whose erroneous ideas local surveyors and architects and builders, however enlightened they may be, are frequently obliged to defer.

Equal in importance to having good pipes properly laid and jointed so as to prevent accumulation and leakage, comes the necessity for disconnexion and ventilation, with the object of preventing sewer air from passing into the building. There are still comparatively few houses where these essentials to a healthy home exist. Since public attention has been so much directed to this subject, all sorts of patent traps and cowls, and so-called patent systems,—some of the most complicated and expensive character, —have been advertised and puffed by enterprising tradesmen, and some lamentable failures have resulted. Now what I want to impress upon you is that if you will only make yourselves thoroughly acquainted with the general principles of disconnexion and ventilation, and see what has already been done by professional architects and engineers, you will soon master the details, and see that for the disconnexion of drains from the sewer and for their efficient ventilation no patent systems are necessary, but that the whole thing is best effected by very simple means. In the first place, a syphon trap should be fixed at the most convenient point between the building and the sewer. In town houses this is commonly in the forecourt or area. The water standing in the trap presents a barrier to the passage of sewer air, and if by absorption and evaporation a little should at any time pass the water seal, it is soon diffused in the open air and does no harm.

Immediately above this trap, that is to say, on the side between the building and the trap, there should be an open drain for a length of from 2 ft. to 4 ft., according to circumstances. For small houses, where the drain is not deep an open channel, with brick sides widened out at the top, and covered with an open grating, does very well; but where the drain is deep, and in large buildings, where there are several branch drains, it is better to build a brick manhole, with open channels at the bottom through which all the drainage must pass and thence through the syphon into the sewer. This man-

* A paper by Mr. Ernest Turner, read before the Architectural Association on the 4th inst. See p. 177, *ante*.

hole may have an open grating over it, but if in a position where there is much traffic, or where dirt or coal-dust is liable to fall down, it is better to have a closed hinged lid, and to carry up ventilating flues in the area-wall or other convenient place. Next carry up the soil-pipe well above the roof, not diminishing the size of the pipe, and leave it open at the top, or place upon it any good cowl which assists an up-current. Do not use those having movable parts, as they are liable to get out of order. The uselessness of some of these cowls may be seen upon many a building, where one will be seen turning one way, and another, only a few feet distant, in an opposite direction. I attribute very little importance to any of these cowls. The result of the disconnexion and opening of the soil-pipe will be that you will have at all times a current of fresh air passing through the entire length of the drain and soil-pipe. The soil-pipe should always be carried outside the building. Remember that the too-common plan of utilising the rain-water pipe as a drain-ventilator is a vicious and unsatisfactory arrangement. In most cases the upper ends of these pipes open close to the eaves of the house, perhaps near the cistern, or close to the attic windows; and, moreover, they are often fully employed in carrying off storm-water from the roof at the very time when they are most wanted for ventilating purposes.

It will frequently happen that the level of the outfall will not admit of drains being laid to the fall I have recommended. In such cases arrangements should be made for periodical flushing at regular intervals. In hospitals, schools, &c., I consider that, however good the fall may be, a proper and regular flushing of soil-pipes and drains should always be provided. Architects have long felt the want of some good appliance for effecting this object. The flushing cistern fitted with Field's annular syphon has lately been introduced, and my own experience of it is that it supplies the want effectually and economically. This is one of those good things, and so extremely simple, that when we see it we wonder how it is that it was not invented a hundred years ago.

Having thus treated the main arteries, we will next consider the tributaries in the form of waste-pipes. These, again, should all be disconnected, that is to say, not carried into a drain or even into a trap unless there is a free current of air between the end of the waste-pipe and the water seal. Perhaps the most important of all is the overflow-pipe from the cistern, which until recently was invariably, and is still frequently, connected with the drain, or, what is as bad, with the ⊔-trap under the closet. Water absorbs foul gases freely, and the defect I speak of has been the cause of much fatal disease. One of the best regulations the water companies ever made was that in all new houses the overflow pipes of the cisterns shall be formed as warning-pipes only; in other words, that the water shall shoot out in some conspicuous place, so that it may at once be known that the ball-valve is out of order. I am not putting forward the water companies as philanthropists, as the regulation is enforced only with the view of preventing waste of water, and the good effected from a sanitary point of view is purely accidental. The other wastes that require to be treated in the same manner are the rain-water pipes, the wastes from sinks, baths, lavatories, and safes,—all of which are frequently connected with a ⊔-trap or drain. I cannot, in the short time at my disposal, enter into a description of the advantages and disadvantages of the numerous descriptions of traps, but I constantly see, by architects' specifications, that ⊔-traps and bell-traps are still much in use. By these two appliances it is probable more illness has been caused than by all the other usual sanitary defects put together. The ℘-traps and ℙ-traps are the simplest and best. One of the best traps to receive the discharge from waste-pipes (and which acts at the same time for surface drainage) is the cheap gully-trap manufactured by Messrs. Doulton.

The various contrivances for the water-closet apparatus are now so numerous that a long and critical essay might be written upon their relative merits. Broadly, there are three classes,—the pan-closet, the valve-closet, and the wash-out closet. I am sorry to say that although pan-closets have been universally condemned by all practically acquainted with their filth-retaining capabilities, they are still daily manufactured by the thousand. I hope the day is not far distant when their use will be contrary to the by-laws of all boards of health and sanitary authorities. It would be much to the credit of any manufacturer who would decline to make them. The valve-closet is probably well known to all of you, and the result of my own experience is that if properly constructed and trapped, and well supplied with water, it is less open to objection, and gives more general satisfaction, than any other. The simplest apparatus is the "wash-out" closet. Of this kind there are now many forms. Bostel's I have used frequently and can speak well of its efficiency. Some object to it on the ground that from its nature a small quantity only of water remains in the basin, and that this is insufficient to cover the soil at the time it is in use.* I must not forget to mention the closet introduced by Mr. William White, which is one of the latest of the wash-out kind.

Some architects and engineers think well of the plan of having no water-trap below the closet basin, and use what are called trapless closets. As long as the water supply and the plunger which closes the outlet from the basin are in perfect working order, these closets may be very good; but if, by any accident, the water is off, the air from the soil-pipe will enter the house through the overflow-pipe and when the plunger is raised. I have also seen the ordinary valve-closet used without a trap under it. This is recommended by some who have given much attention to the subject, but my experience is decidedly against it. In practice I find no reason to modify my opinion, expressed some years since, that the advantages of a properly-constructed water-trap under a closet basin outweigh all the objections that can be raised to it. It is advisable to carry a ventilating-pipe from the box of a closet, and the waste-pipe from the safe should be carried through the wall and left projecting, with simply a hinged copper flap to prevent draughts.

Much trouble often results from a want of care or knowledge in arranging for the service of water to closets. However good the apparatus may be, it is of course essential to obtain a good flush of water. I have frequently seen in specifications,—"the service-pipes to closets to be ¾-in. pipe," &c., without any regard to the pressure. It was but last week I found that a plumber had taken a 1-in. pipe from a cistern to a closet about 5 ft. below the cistern, with a ¾-in. branch and valve; whilst to a closet 20 ft. below the cistern he had taken a 1-in. pipe and a 1¼-in. valve. To get a proper supply, it is necessary to have 1¼-in. pipe and valve where the bottom of the cistern is less than 8 ft. above the water-closet apparatus, a 1-in. pipe and valve up to 12 ft., and ¾-in. pipe and valve over 12 ft. For wash-out closets you may increase the diameter of the pipe in each case by a ¼ in. The regulation of the water companies by which the quantity of water to flush a closet is limited to two gallons has given a great deal of trouble, and is, in my opinion, an insanitary measure. Every flush should be sufficient to carry away the contents of the pan through the drain and into the sewer, and if the closet is situated at any considerable distance from the sewer, two gallons of water are insufficient. At the Seamen's Hospital I found six gallons none too much to give a proper flush. For the wash-out or hopper closets you will find nothing better than the syphon waste-preventer. The great advantage of these cisterns is, that if the handle is pulled, the whole of the water in the waste-preventing cistern is syphoned out whether the handle be held down or not. There are several "waste-not" valves for fixing under the seats of closets. None of these seem to have been brought to perfection yet, but Tylor's I have found to be the best.

In old London houses one constantly finds the water-closet under the stairs or in the centre of the house in a position where light and ventilation are difficult or impossible to obtain. In hospitals it is essential, and in other buildings desirable, to have a ventilated lobby between the main building and the closet, and the suggestion made by Dr. Thompson that the closet should be kept at a higher temperature than the lobby, so that the air may be drawn to the closet instead of from it to the main building, is well worth attention.

In large buildings, where considerable storage of water is necessary, proper provision for tanks will often be found, but in moderate-sized houses how often is it that the position of the cisterns is shown on plans? Some out-of-the-way place is sure to be found for them, and if not, they must be placed on the flat and covered over. Now the position of the cistern is really one of the most important things to be considered in the proper sanitary arrangement of a building. To begin with, it must be placed where there is no chance of the water becoming polluted by impure air; it must be covered so that neither light nor dirt can get to it; it must not be in too warm a place, neither must it be where there is danger of the water becoming frozen, by which process all drainage arrangements, however good they may be, are at once rendered inoperative. Again, the cistern must be in a place easily accessible for cleaning,—a process greatly neglected by householders and those having the care of large public institutions.

I have been requested to make my paper short, as there are many who may wish to take part in the discussion. I have therefore resolved, at the last moment, to omit that portion of it which treated of practical ventilation,—a subject which presents some of the most difficult problems which have to be dealt with by the architect. One great difficulty is the difference of opinion as to efficiency or non-efficiency of his work by different people in the same building. Take, for instance, a public office containing men of all ages and temperaments. The athletic young man of twenty-five, who takes a header into the river before his breakfast and rides to town on his bicycle, comes into the room, calls it "stuffy," and pants for air; whilst the grey-headed or bald chief of the department gets as near as he can to the stove, puts up his coat collar, dons his skull-cap, and shivers and grumbles at the draught. That good ventilation is of the highest value in maintaining health is beyond doubt. Dr. Parkes tells us that in addition to a generally impaired state of health arising from faulty aëration of the blood, and to phthisis and other lung affections which may reasonably be believed to have their origin in the constant breathing of air vitiated by the organic vapours and particles arising from the person, it has long been considered, and apparently quite correctly, that such an atmosphere causes a more rapid spread of several specific diseases, especially typhus, small-pox, scarlet fever, &c.

Some well-marked instances of the effects of bad air and the value of ventilation were observed in two Austrian prisons. In the Prison of Leopoldstadt, at Vienna, which was very badly ventilated, there died in the years 1834-37 no fewer than 378 prisoners out of 4,280 (or 86 per thousand), and of these no fewer than 220 (or 51·4 per thousand), died from phthisis. In the well-ventilated House of Correction in the same city, the deaths only amounted to about one-fourth of the number. It is, indeed, a well-ascertained fact that air only moderately vitiated, if breathed daily, produces the most serious results.

I fear that architects have been too much on the look-out for some single appliance, some patent ventilator, which can be entered in their specifications briefly as "Insert where shown on plan, or where directed, or provide —— Jones's patent ventilators at —— each, exclusive of fixing." You may search in vain for any single appliance which will ventilate your buildings satisfactorily. Ventilation means the admission of a sufficient quantity of fresh air and the extraction or expulsion of a corresponding amount of vitiated air without sensible draught, so that both inlets and outlets are required.

Warming is part of, and cannot be separated from, the art of ventilation. Cold-air inlets have received much attention, and vertical tubes, conical perforations, and many other ingenious methods of introducing cold air, have been devised, all useful in their way; but the introduction of fresh air warmed to anything like the temperature of the human body has been much neglected. Although, like other Englishmen, I fully appreciate the cheerful appearance of the open fire, I cannot lose sight of the fact that where warming is attempted by radiant heat alone we may be toasted on one side and chilled on the other.

The subject of ventilation is one that has many ramifications, but I can only refer to them in the briefest possible manner. Thus the size of rooms,—especially of bedrooms,—the height of rooms, the amount of window-space, the height of win-

* Of this class the "Vortex" and the "Carmichael" are very good closets. Whilst fully recognising the value of simplicity of construction and the absence of working parts, I consider the objections which have been made to the best forms of valve closets as theoretical rather than practical.

dows, the thickness of glass, &c., are all indissolubly connected with this great question of ventilation. How to introduce in the simplest and most economical manner a constant supply of fresh warm air at a rate of about 3,000 cubic feet per head per hour is the problem to which architects will do well to direct their attention, and one on which I hope to offer some remarks on a future occasion.

AIMS FOR ART STUDENTS.

WEST LONDON SCHOOL OF ART.

AT the recent annual meeting of this institution, held in its new premises, Great Titchfield-street, the chairman, Mr. Comyns Carr, after presenting the prizes, — upwards of 100 in number,—proceeded to address the students. He said it was with a great deal of pleasure that he had accepted the invitation of the committee to preside on that occasion, although now that he was confronted with his task, he felt a certain amount of hesitation as to how he should fulfil it; for, as many of his audience were, no doubt, well aware, he was not a practical artist, and therefore could not tell the students anything that would be of immediate use to them in their preparations to fit themselves to be practical artists in the various branches of work to which the name of art might be given. He would not, if he could, dare to say one word which could be construed into dogmatism upon any branch of the students' pursuits, for he felt that he should be unable to say anything which could possibly be of use to them. Nor, indeed, was there need. Evidence had been afforded that evening that the interests of the students had, in the past, been very well cared for, and testimony had been given that they were well cared for in the present. But, however elevated or however humble the artist's functions might be, art was not and could not be altogether a thing of mere technical accomplishment, however good,—of mere handicraft, however cunning. The students whom he saw before him, for whatever branch of the profession they might be destined, if they were to succeed, would have to combine with the cunning of their hands and the perfection of their technical practice, some quality of mind, some element of soul, if they wished to preserve their work from becoming absolutely conventional and dead, and it was therefore, perhaps, not altogether presumptuous in him,—one who, though not a practical artist, had yet thought and written about art,—to say something about that intellectual element of their labours which must, of necessity, in a great degree, engage the after-attention of the students. He was the more desirous of saying what he had to say because he felt that art-critics and writers on art had often a great deal to answer for. All of them sometimes, and some of them always, wrote a great many platitudes and gave currency to a great many fallacies about art, and it was in a spirit of sincere repentance and remorse that he was anxious, if he could, to protect the students against the consequences of some of those platitudes and fallacies which were freely uttered in criticisms on art, and which, he thought, could not but penetrate into the minds of those who read them. It was, for instance, a dangerous fallacy to urge that the artists of the nineteenth century were to strike out a new path, to enter upon a new field, to labour to make new inventions in the world of colour and design, with the view of surprising their successors by some astonishing achievement which should prove, in one word, that the artists of the nineteenth century were "original." Now, he believed that "originality" was the pet vulgarity of the present century, and that there was nothing which led so many good men astray, and which made so many poorly-gifted men and women gain a cheap applause, as that so-called gift of originality. There might be an "original" shop for the sale of "maids-of-honour," and there might even be "Original" Christy Minstrels,—gentlemen who might be entitled to claim to have been the first to black their faces for the sake of public amusement; but if they (the students) would believe him, and still better if they would believe themselves, there was no such originality possible to art. All the greatest men and women who had practised art in all the greatest ages had been those who had taken most frankly from the store of the past, and who had most willingly acknowledged their indebtedness to those who had preceded them. Art was no new-found thing. It was not even new in the sense in which science could be new, but was in its beginnings as old as the world, and there was no danger, however much a student might be betrayed into plagiarism, that he would suddenly find himself a Phidias or a Michelangelo; at any rate, it was a danger which might safely be neglected. In what sense, then, was it possible for the artist of the present time to be original? Originality, in the only sense in which it was worth the attention of the student of art, meant sincerity. In other words, originality, in the only sense in which the artist could have any satisfaction to himself in taking account of it, meant the expression of his own feeling as it was aroused by the contemplation of nature. If he sincerely felt the beauty which he saw around him, he would be original; and if he sincerely felt the beauty, whether in nature or in the works of past times, he need never fear to be dubbed a plagiarist. But there was another danger which he thought was more subtle, because it was urged by persons of high intellectual authority and position, and that was the danger which arose from the constant persuasion and advice to artists to do something which should be "in sympathy with the age." Now, he was well aware that he was not addressing an assembly merely of future painters. Some of those whom he was addressing would never be exhibitors at the Academy, because, after having passed through the period of studentship, they would find that they had gained nothing more than a knowledge of their own unfitness to go any further. Others of the students would never be exhibitors at the Academy because they would be engaged, and no doubt successfully engaged, in other branches of art. But, whatever might be the special branch or branches of art to which they devoted themselves, they should ever remember that, in the words of that mort distinguished artist, the late Alfred Stevens, the sculptor of the Wellington Monument in St. Paul's, "Art is one." Let not the students think that, because the best of their future works were not exhibited at Burlington House, their art-work was any less worthy or creditable in its own sphere than that of those who were diplomaed painters of the Academy. All who were conversant with the history of art knew that, in Italy especially, there was a time when men successfully practised in all the great branches of art, passing from the studio of the sculptor to that of the painter, and from the painting of pictures to the designing and erection of buildings, without any appearance of effort. He did not say that such days would ever be seen again, but that such days once were was a convincing proof of the apophthegm that "art is one." He, therefore, urged his hearers not to be in too great a hurry to be "in sympathy with the age" in which they lived. All the men who were now looked back to as great exponents of times past were men who, above all things, were possessed with profound feeling of reverence for the past. There was no artist of his time who was possessed with such reverence for the art of the past as Sir Joshua Reynolds, yet he had painted portraits which seemed to embody not merely the images or likenesses of his sitters, but their very thought and feelings, so that we seemed able to read in them, when collected together, an epitome of the social history of his time. In conclusion, Mr. Comyns Carr expressed the interest which he felt in the work of such schools, and spoke of the paramount claims of the study of Italian art upon all who adopted art as a profession.

Mr. J. D. Crace, having made the announcement already published by us (p. 82, *ante*) as to the Travelling Studentship which will, by the liberality of Mr. Mence Smith, be available for competition amongst the students during the next three years,* Mr. Walter Graham, the treasurer, moved, and Mr. Crace seconded, a vote of thanks to Mr. Rawle, the head-master, speaking in high terms of the ability and zeal which that gentleman brought to bear in the discharge of his duties.

Mr. Rawle, after acknowledging the vote of thanks, and alluding to the long time his predecessor (Mr. Stewart) had been so honourably associated with the work of the school, said he was sure he was only expressing the sentiments of the students when he said they were grateful for the many encouragements offered them in the way of prizes, and now their indebtedness was still further increased by the announcement made to them that evening concerning the Travelling Studentship offered them by Mr. Mence Smith, and for this noble prize, they could not be too earnest in the expression of their grateful thanks, and he also knew how greatly the students' thanks, and his own, were due to Mr. Crace, to Mr. Graham, and to other members of the committee, for the warm interest they had taken in that matter. He trusted that those students who were engaged in decorative art, would show Mr. Mence Smith that his generous offer had not been made in vain. That was the greatest prize placed before them to work for, and there was not another of similar character in the kingdom. The winner of that Travelling Studentship would have most exceptional opportunities for improvement and for the refinement of his artistic tastes. If he fairly used his opportunities while in Italy, and kept his eyes and his heart open to the glorious influences surrounding him, he would return to his native country with a mind refreshed and invigorated, and filled with all-absorbing thoughts regarding the nobility of his art. In this foggy clime they could realise but very faintly the artistic glories of Italy. That country was a treasure-house of untold wealth to the painter, the sculptor, and the decorative artist. There were many things they read of about Italy which aroused their interest and wonder, but, he could truly say, it was not until he had been there, and tasted at the fountain-head, that he knew what it was to feel that kindling of enthusiasm which can only be truly felt when in the presence of art in all her majesty and grandeur. Mr. Rawle then proceeded to address some works to the students regarding their work generally. He said that all who had any experience in tuition found that students were pretty much alike in character wherever they might be met with. One thing to feel proud of was that by far the great majority of them were earnest hard-workers and anxious to make headway in their various callings. That was matter for congratulation, still, not unmixed with regret that students did not, as a body, think sufficiently, or use their eyes as they ought to do, while engaged upon their work. Too much was left to the poor hand to accomplish, without being sufficiently directed by the brain. The eye and the hand, in all art-work, were simply the instruments of the brain, and if the latter failed in its directing power, they became mere unintelligent machines. This want of thought was so apt to make the student fail in realising the artistic unity of his work. He contemplated his subject in detail only, and failed to secure that oneness which all true and great work should possess. The speaker illustrated what he meant in the drawing of an antique figure. The tendency was to make it only a mass of littlenesses, without any consideration of the figure as a whole. The lights and shades of the separate parts were represented without due regard to the subordination of one part to another. There was an absence of the balance of quantities. The lights were overloaded with half-tints, and the shadows cut up with staring and exaggerated reflected lights. Each small part asserted its own individuality too strongly, hence the unity of the figure was lost, and the study became an entanglement of shreds and patches, instead of a work of art. Those remarks applied just as truly with regard to any branch of study,—whether of the figure or landscape, in light and shade, or in colour,—or whether in connexion with decorative design. They should, in all their work, endeavour to avoid littleness. They should throw the entire heart and mind into the realisation of the work set before them, as a whole. It was only by the most careful thought and study that they could do this successfully. All true art work, of whatever grade, was based upon knowledge, and they must reason out the wherefore of everything. The eye and the brain must be fully exercised in their powers of observation; the brain perceived through its organs, the eyes, and flashed its signals down to the hand. Their work should be, in the truest sense of the

* This "Travelling Studentship" is, so far as we are aware, the first started in connexion with any District School of Art, and is likely to effect good. It is placed at the disposal of the school for three years by the Painters' Company, and originated in this way. A sum of 150*l.* had been given to the Painters' Company (whilst Mr. J. Gregory Crace was Master) by one of the liverymen, Mr. George Mence Smith, with the object of encouraging the study of painted decoration, and Mr. Crace advised that it should be made available for the West London School of Art, because several liverymen of the Company are on its committee and represent large decorative firms. The committee of the school were invited to propose a method of making it useful, and they drew up a scheme for a Travelling Studentship of the value of 50*l.* for a student visiting Italy. The conditions are about to be issued.

words, brainwork and heartwork; and it was only by looking upon their work in that light that they could hope ultimately to accomplish great things. He concluded by congratulating the prizewinners upon their successes, and by expressing the hope that the eloquent words addressed to them by Mr. Comyns Carr would become ingrafted in each student's personal life and experience.

MODEL BYE-LAWS FOR LODGING-HOUSES.

Sir,—I am very glad to see that the Local Government Board (after six years' incubation) have prepared bye-laws for the regulation of houses let in tenements; and I sincerely hope they may be speedily adopted in all the poorest quarters of the town.

I believe that if the various Acts of Parliament that exist for the social regulation of the poor inhabitants of London were put in force, nine-tenths of the misery and crime would cease to exist.

I read your announcement immediately after reporting on several houses in a court leading out of Euston-road, which, through the utter neglect of their owners, have at last become structurally dangerous, and which, frightful as is their condition in a sanitary and social point of view, are but a type of thousands of others in the metropolis. Disgustingly filthy, fearfully crowded, and tumbling to pieces; the pavement of the yards long since smashed into small fragments; the "bell-gratings" of drain-traps gone; a condition of things exists which I hardly think could be paralleled in the worst Irish village, or even in an encampment of savages. One room was occupied by three geese and about a dozen fowls, and the stench was unbearable; although in others, occupied by human beings, it was not much better. In another room where I was able to stop and speak to the occupant, there lived and slept a man, his wife, and a grown-up son and daughter; and this was a comparatively well-kept apartment, whose tenant proudly informed me that whatever there might be in other rooms there was no overcrowding there. In the next small back-room, 8 ft. or 10 ft. square, four people lived. Children neglected and half-naked crowded other rooms, and I can safely say that if the School Board had succeeded in clearing these children from the streets, as is their frequent boast, it was only by driving them into their wretched homes, there to be confined in dirt and squalor. In the adjoining street, three doors from the corner of this court, stands a large and handsome Board school.

The failure of the local authorities to deal with these cases, and apply the Acts they are entrusted to administer, must, sooner or later, claim the attention of the Government. In my humble opinion, a staff of Government inspectors, well acquainted with the provisions of *all* the Acts relating to the social condition of the poor, and able to require the prompt enforcement of the respective provisions of each, would go a long way to correct the present inaction.

But there is another point to which I am anxious to draw attention. I suppose there is no class of property-owner to whom the adage that "property has its duties as well as its rights" more forcibly applies than to those who derive income from the dwellings of the poor. As a rule, they are leased, under-leased, let house by house, and probably sublet to an occupier, who again relets them in "tenements" or separate rooms. It is bad enough that the poor inhabitants thus pay about double the fair gross rent by the year of their dwellings. Surely the original landlord might, at least, take care, in return for his income (which, whatever might happen to his lessees, is perfectly secure for him) that the houses are fit to live in.

If a landowner in the country neglect his cottages, and fever ensue, the newspapers hold him up to public indignation; but the same landlord may derive ground-rents from places in London in which he would not have his pigs, and where disease is normal, and no one complains.

The original leases, no doubt, contain the usual stringent covenants to "repair, uphold, cleanse, amend, and keep in tenantable repair," and to paint and whitewash, at regular intervals, or once in so many years, and also as often as need requires, with power to the landlord to inspect periodically.

It is not too much to require that the landlord shall exercise as a duty that power which he claims, and has reserved as a right. Power ought to be given to the Local Government Board, on the report of such inspectors as I have suggested, to order a survey of dilapidations to be made; to cause notice to be served on the freeholder, and in the event of the notice not being at once complied with, to have all necessary work done and charged to such freeholder, leaving him to obtain redress from his lessee if he can. I am convinced that no thorough amelioration of the disgraceful condition of the dwellings of the very poor will be obtained until the remedy is in some such way applied to the source of the mischief; and that the chief cause of that condition is to be traced to the fact that the freeholders, if they care at all for these things, consider themselves relieved of all responsibility by the granting of leases.

The enactment and enforcement of such a provision would also benefit the various owners of this class of property by preventing further dilapidation and degradation. Of 200 buildings that I have had to report upon as dangerous structures during the past twelve months, considerably more than half have become so through the neglect, year after year, of those ordinary repairs and "upholdings" of which the freeholder ought to have required the execution, and which, if duly executed, would have saved the property from destruction, and in many cases the lessees from liabilities which they have now no means to meet.

I trust that you may think these suggestions worth notice as a contribution to your valuable and persevering advocacy of social improvement.

Frederick Wallen,
District Surveyor for West St. Pancras.

PERSIAN PLAN DRAWING.

Sir,—Without meaning any disrespect, allow me to say of all the "mares' nests," with reference to proportion in architecture, Mr. Statham's beats all that I have ever heard of. If such a method holds good, it would do away with all attribution of merit to the architect, and transfer this to reticulated paper and accident. Mr. Statham may possibly best know what amount of merit is due to the architect in matters of proportion, but I, myself, should have hesitated before placing it at so low a reckoning. There can be no manner of doubt that reticulated paper is a great convenience in designing, but it is no new thing, and should have long since been easily attainable in this country.

If an architect "has no detailed instructions to guide him, [he] is likely to take round numbers in feet each way." This is Mr. Statham's simple statement of the æsthetics of architecture. Such a method might, indeed, now and then accidentally produce agreeable proportions, but the odds are enormously against it being successful on every occasion. But even in the event of an occasional success, the reason why some ratios accidentally hit upon should be harmonic, whilst so many others obtained by the same method would not, would still remain to be discovered. Reticulated paper would be most useful to an architect who should understand the science of proportion, for by it he could adjust ratios without having recourse to either rule or compasses. In the absence of such a knowledge, reticulated paper would be comparatively useless, except in reference to scale. In this respect, it is as useful to the painter as it is to the architect.

Meter.

DEPOSIT OF DAMP ON SHOP-WINDOWS.

Sir,—I have lately inserted a plate-glass shop-front much higher than the ceiling of the shop, but with inlets and outlets in the head and cill (which project 1 ft. from the front), and iron casements to the return lights. There are two gas-burners near the window, inside.

In the old front, which this supersedes, and constructed on a similar plan, but with small squares of glass, there was little or no deposit of damp, though there was no systematic ventilation. On the new plate-glass there is literally a stream of condensed moisture every night. Can any of your readers suggest a remedy? W. S.

DRAWING PILES.

Sir,—Will some of your readers kindly give me a hint as to the best manner of drawing piles. They are whole timbers, about 15 ft. out of the river bed; water, 10 ft. deep; and were driven with a one-ton monkey, about 10 ft., through bog and sand on to a bed of gravel.

Harcourt Runnacles.

VENTILATION, CHIMNEY-DRAUGHT, AND SMOKY CHIMNEYS.

Sir,—Mr. Robins is rendering a public service by his useful papers; but though he states that we discharge as much as 18,000 cubic feet of air per hour by a single chimney, and though he alludes to the reduction of pressure occasioned by difference of temperature, I do not find that he makes any direct allusion to the most important subject of the reduction of the pressure of air within a house by means of chimney-draught. I endeavoured in my last letter to show the great importance of this, and shall be glad if you will allow me to add that a knowledge of the subject of chimney-draught is absolutely essential if we wish to understand the subjects of economical warming, ventilation, and the prevention of smoky chimneys.

The principal reason why the subject of chimney-draught is not understood is that we have no air-meter, or anemometer, as it is called, by which we can as readily ascertain all about chimney-draught as we can about temperature by the use of a thermometer. If we had such an instrument, we should find that, by many lofty chimneys, when a good fire is burning, we discharge actually as much as 60,000 cubic feet of air per hour. Where the air comes from I endeavoured to explain in my last, also the serious evils to which we are subject, and under which we suffer by our present want of system. One of these evils is what we call *closeness*. As this is a vague term, allow me to state that the disagreeable feeling of closeness is brought on partly by the use of gas, sometimes by the presence of too many persons in a room; but that the cause which we have to take most seriously into account is the reduction of the pressure of the air in a room occasioned by chimney-draught, so that people who understand nothing about ventilation, say instinctively,—"The room is so close, open the door." They probably imagine the air is changed thereby, and it certainly is so to some extent, but the chief benefit of opening a door or window is to restore to the air a healthy pressure.

In connexion with this subject allow me to refer to the use of the blower, which is now, most unfortunately being revived. Its only legitimate use is to assist in contracting a large open fireplace by which smoke does not pass freely away. When used indiscriminately it swiftly makes matters worse than before. Under the pretence of making the fire burn brightly, it very greatly accelerates the chimney-draught, rendering economy impossible. The demand for fresh air is increased, and the other evils I mentioned in my last are as bad as before, with modifications of no substantial value. Added to this, the blowers get out of order and become immovable unless we adopt the expensive system of suspending them by chains and weights.

I have often pointed out that we need have no smoky chimneys, but the proper way to prevent them, or rather to endeavour to do so, is not by the use of the blower, or even by miserable cowls and windguards. A systematic supply of fresh air without draught to supply the minimum quantity which escapes by every chimney, and the proper control of chimney-draught, are the two remedies by which we may render smoky chimneys all but impossible.

Smoky chimneys need not exist. They do not exist in many public buildings where not a cowl or a blower is to be seen. They are not to be found at Keble College, Oxford, and it will probably be considered some day that a smoky chimney affords *per se* evidence of a want of knowledge both of architect and builder.

Fredk. Edwards, Jun.

West Bromwich.—The Mission Church of St. Michael and All Angels, West Bromwich, was opened lately by the Bishop of Lichfield. It has been erected at the sole expense of the Rev. H. Jesson, curate in charge, from the designs of Messrs. Wood & Kendrick, architects, West Bromwich, by Messrs. Stockton & Sons, builders, Oldbury. The church consists of nave, capable of seating 250 persons; also chancel, sacristy, baptistery, and choir vestry. The materials used are brindled bricks and Portland stone. The chancel is separated from the nave by an elliptical moulded arch, in the centre of which is a screen. It contains seats for choir, sedilia, and piscina, the roof being supported on hammer-beam principals. The church, which is fourteenth-century Gothic in style, has cost 1,500*l*.

COMPETITIONS.

Masonic Hall, Club Premises, and Shops, Merthyr Tydfil.—Considering the unsatisfactory nature of the conditions, some fair samples of design were submitted in the above competition, London and Liverpool contributing half a dozen, with others from Bath, Aylesbury, Bristol, and several from Cardiff and neighbourhood. Eventually the design bearing the motto "Plain and Practical," by Messrs. Wing & Johnson (Whitehall, and Abergavenny, Mon.), was selected as being the best.

Rochdale Board School.—The School Board offered premiums for the best designs for schools to accommodate 500 children, at a cost not exceeding 10*l.* per scholar. There were thirty-eight competitive designs sent in, and from these, after many sittings, the Board selected two. The design which has secured the first premium, and which is to be adopted for the school, is that marked "Utility," and is by Messrs. Mangnall & Littlewoods, of Manchester. In this design the mixed school for boys and girls is situated on the south side of the site in Derby-street, and is 54 ft. 6 in. long, by 22 ft. wide, and 20 ft. high, with accommodation for 120 scholars, allowing 10 ft. of floor-space for each scholar. Directly communicating with the schoolroom are four class-rooms, two of which will accommodate 55, and the others 35 scholars each, allowing 10 ft. of floor-space for each scholar. Three of the class-rooms will have large openings, and be fitted with a revolving partition, communicating with the school-room, so that the master will have visual control over these rooms, although in the school. Hat and cloak rooms and lavatories are provided for each sex in immediate connexion with the entrances, which are separate for each sex. The infant school is situate at the north end of the site, in Derby-street, the principal approach being from this end. The school is 44 ft. long, 22 ft. wide, and 20 ft. high, accommodating 120 children, allowing 8 ft. of floor-space for each child. The elevations, it is stated, will be faced with stock bricks, with masonry sparingly introduced where most required to throw off the water. Red terra-cotta ornamentation is also proposed to be introduced.

Burton-on-Trent Market Hall.—The premiums for the above have been awarded as under, viz., —1st, of sixty guineas, to Messrs. Dixon & Moxon, Barnsley; 2nd, of twenty-five guineas, to Messrs. Roper & Browning, Manchester. Mr. Evans (Evans & Jolly), Nottingham, was called in by the Council to report and adjudicate on the p'ans.

IMPROVEMENTS IN MANCHESTER.

CHIEF among the improvements effected in Manchester during the past year has been the introduction of a tramway system, which is expected to be complete eighteen months hence. As compared with those of many other large towns, the streets of Manchester are but ill-adapted for tramways, and in deciding to adopt them the corporation were fully alive to the difficulties which they would have to surmount before they could be worked satisfactorily. The whole of the lines constructed and to be constructed by the corporation, together with those connecting the city with the surrounding districts and other boroughs will, without exception, be leased by the Manchester Carriage and Tramways Company, for a period of twenty-one years, at rentals fixed according to the value of the traffic on the different routes. Excluding a few long cars, which involve the changing of horses at the end of each journey,—and these are only to be used when a long distance on an easy gradient has to be undertaken,—the whole of the vehicles are to be on the reversible principle. The lines already opened in Manchester comprise the Deansgate terminus of the Salford, Pendleton, Swinton, Eccles, Weaste, and Patricroft routes, as well as those on the Higher and Lower Broughton, the Hyde-road and Gorton, the Stockport-road, Longsight, Levenshulme, and Stockport, the Oxford-road, Rusholme, and Fallowfield, the Stretford-road, Old Trafford, and Chorlton-road, the City-road, and Stretford routes. Those in the city alone make a total length of twenty-one miles of single lines. Barker's system of tramways has been adopted on nearly all the suburban roads, but in Manchester the lines are laid on a model which embodies the principles of Gowan's patent, the right of which the Corporation have purchased. It consists of a rolled rail, 7 in. deep, with a bearing flange, 7 in. wide. The groove is planed out of the solid head, and the rail, fished up in the ordinary manner, is bedded on a concrete foundation. In Great Jackson-street, Hulme, two experimental lengths of line have been put down. One, the patent of which has been secured by Messrs. Ridley & Co., of Newcastle-on-Tyne, consists of a malleable iron plate, 12 in. wide and ⅜ in. thick, to which a rail, similar in construction to that used by the Manchester Corporation, but narrower at the base, is keyed down. The second length is the patent of a Manchester gentleman named Gunson, and consists of granite sleepers, 10 in. on the bed and 8 in. thick, the rail being dovetailed into the stone, and secured by Val de Travers cement.

While the Corporation have been busy in improving street locomotion, the different railway companies have bestirred themselves to provide better station accommodation. Two new stations have been opened, two others are being enlarged, and the erection of another has been commenced. The principal of the two new structures is the Central Station, the joint property of the Manchester, Sheffield, and Lincolnshire, the Great Northern, and the Midland Railway companies, which have for some time been amalgamated for the purposes of combined traffic under the title of the Cheshire Lines Committee. Built on a design similar to that of St. Pancras and the new station of the North-Eastern Railway Company at York, the station in Windmill-street is (says the *Manchester Courier*, from which journal we are quoting) one of the finest buildings of the kind in the country. At the platform level, the arch, which springs from the ground on either side, has a clear span of 210 ft., and its length is 550 ft. Between the wooden floor of the station and the nether part of the roof, there is neither supporting girder nor tie-rod, and an unbroken view is obtained of the glazing 85 ft. above. A large amount of space has been reserved in front of the station, and it has not yet been decided what use shall be made of it. There are ample means of approach, and these will be the more available when the corporation have carried out several improvements which they contemplate in the streets converging upon the station. The other new station alluded to is that of the Lancashire and Yorkshire Railway Company at Ducie Bridge. A considerable extension of Victoria Station is contemplated by the same company, but the work cannot be undertaken until the old buildings sold by the Manchester poor-law guardians in New Bridge-street have been vacated by the workhouse inmates.

The principal street improvement made by the corporation has been the widening of Piccadilly, at the foot of the approach to London-road Station. Formerly, the parapet of the bridge over the Rochdale Canal formed an awkward and an almost dangerous projection. The bridge has been re-constructed, and the thoroughfare widened to the extent of eight yards. A new bridge has been carried over the canal in Dale-street, and the improvement thus effected was so great that the railway companies using the station undertook to pay 5,000*l.* towards 17,000*l.* which were expended on the work. The widening of Tib-street, Piccadilly, has been pushed a step further, and several minor alterations in other thoroughfares have been effected. A new thoroughfare to open out the thickly-populated district of New Islington is urgently required, but as the work would involve an enormous outlay, the Improvement Committee will probably not be in a position to undertake it for some time to come. This district has been selected for the first public baths erected by the Corporation, and the *Courier* hesitates not to say that, large as has been the number of bathers, it would be considerably more if one half the population knew how to find their way to the building.

The Libraries Committee, guided in its work by the present mayor (Mr. Alderman Baker) has not only provided separate reading-rooms for boys at several of the branch free libraries, but has commenced the erection of a lending library in Deansgate, in place of the old building at Campfield, and purchased land for the extension of Livesey-street branch library. Three other educational institutions have been erected, —the Nicholls Hospital, the Grammar School, and the School of Art, in addition to several Board schools.

CHARGES.

SIR,—Is there any fixed or recognised charge for valuation of property (buildings) in the Court of Chancery? If there is, what is it?

The value is about 9,000*l.* VALUER.

CHURCH DECORATION.

SHARROW, ST. ANDREW'S.

THE interior art decoration of this church, near Sheffield, on a somewhat extensive scale, has just been completed. The treatment of the chancel exhibits a large amount of ornamentation. There are on the north side the twelve Apostles with their respective emblems, beneath them being the legend, "The glorious Company of the Apostles praise Thee." On the south side are twelve of the Prophets, with the subjoined legend, "The goodly fellowship of the Prophets praise Thee." The figures and entablatures, of which the ground is dead gold, are in spirit fresco, their subdued effect depending mainly on outline, with but a sparing use of colour. The whole chancel work is on a vellum-coloured ground, diapered and lined in ashlar pattern, surmounted by an ornamented frieze. A dado in dusky red carries the monogram "I. H. C." round the entire chancel; the principals of the roof being also decorated in gold, red, and black. The whole interior of the church has also been painted, coloured, and murally decorated, the richer and more pronounced decorations being, however, confined to enunciating the salient features of the architecture. The designs were prepared, and the whole work executed, by the firm of Powell Brothers, Leeds.

BUILDERS' FOREMEN.

SIR,—Force of circumstances tempts me to ask you to find a little space (for a subject which, I think, judging from the advertising columns of your valuable paper, and some personal experience, would affect a numerous class of your readers. I have an idea that something in the way of a benevolent association should be formed amongst builders' foremen. My idea is that it should take the form of a benefit society, giving aid to its members in sickness, in want of employment, and in fact, at all times of need, and should be so framed as to enlist the sympathy and pecuniary support of the master builders.

Builders' clerks, I believe, have their benevolent association, and I feel assured builders' foremen require something of the kind.

In London and large towns evening meetings, or Saturday afternoon meetings, for mutual improvement might, I think, be made a part of the scheme; in fact, it is a matter that, if taken in hand earnestly and wisely, may be made a medium of great usefulness and assistance to many a struggling, hard-working man, and I hope some one may be induced to take the matter in hand, and bring it to a practical issue. A BUILDER'S FOREMAN.

*** Does not the Clerk of the Works' Society include Builders' Foremen?

BOILER EXPLOSIONS AND FROST.

SIR,—We have read with interest the correspondence on this subject in your issue of the 5th inst., and we think that it will be found in practice that no arrangement of safety-valves or other similar appliances will avail against explosion if any portion of the circulating pipes becomes frozen. Indeed, your correspondent, Mr. Smeaton, virtually admits this when he writes that "it is of vital importance to protect the flow, return, and expansion pipes from the *possibility* of freezing to insure proper working."

As regards bursting of boilers under other circumstances, we think the plan advocated by Mr. Eldridge so much the safer, that in all cases we work on that principle; but householders do not seem to be sufficiently aware that all hot-water work should be thoroughly examined by practical men once a year at least.

YOUNG & BUSS.

Metropolitan Board of Works.—The death is announced, on the 12th instant, of Mr. Geo. Beattie, Assistant Solicitor in the General Law and Parliamentary Branch of the Solicitor's Department of the Metropolitan Board of Works. Mr. Beattie, who was a member of the Incorporated Law Society, was admitted to practice in Easter Term, 1868, and will be remembered by some of our readers as having occasionally conducted cases before a magistrate under the Metropolitan Building Act. Mr. Beattie had only been a short time in the service of the Board, having been appointed in December, 1878, but was much esteemed for his urbanity and intelligence.

SANITARY TACTICS OR GYMNASTICS.

SIR,—Being an architect, I almost feel that some apology is due to you for venturing to occupy any of your valuable space in making a few remarks upon matters which lately, we have been given to understand, have almost, if not quite, passed from under the cognisance and control of the profession to which I have the temerity to belong.

I can recollect the time, sir, when a certain paper, the title of which will, no doubt, be familiar to you, waged an almost single-handed warfare against matters unsanitary.

The editor of the paper in question was not satisfied with merely confining his attention to abuses of a local nature, but wielded a mighty pen against high and low, rich and poor, with merciless severity, when and wherever he found them aiding and abetting in aught that tended to either moral or physical disease.

If, sir, you have any idea as to whom I refer, you will, of course, know that the gentleman in question was a member of the architectural profession, and that his journal was addressed to, and supported by, the profession, —now, alas! effete and discredited, so far, at least, as matters sanitary are concerned.

To you, who bore the heat and burden of the fray, before as yet the subject in which you nobly sought to interest the public had become fashionable, it must be somewhat astonishing to see the eager,—may I say tumultuous and unruly?—onslaught with which the army you raised from nothingness now rushes to the attack.

To me the spectacle is sad. There, aside, stand the remnants of those who in years gone by fought the fight; good men and true in their day, although, perhaps, they used weapons now somewhat antiquated. Hither and thither rush their successors, a motley crew, nominally fighting under the banner inscribed with the word "Specialists," but apparently with no leader. See of what heterogeneous materials the army is composed,—C.E.s, R.E.s, "Sanitarians," "Humanitarians," "Patentees," "Limited Liability Household Inspection Companies," "Sanitary Reform Associations," "Sanitary Plumbers and Glaziers," *et hoc genus omne*. See them each and all wielding their own almighty infallible nostrums; their cavalry charging headlong on well-meaning and carefully-nourished hobbies, but well-nigh riding the poor beasts to death in their eagerness to be in the van.

A motley crew, perhaps, but see with what lightning-like rapidity they execute an attack. The flat goes forth from some invisible leader. "Soil-pipes outside!" and watch their eager haste. "Theirs not to reason why," but they come by thousands, and in less time than it takes to write this the work is done. Behold them altered to command, some trapped, some untrapped, some of cast-iron, some lead, some disconnected, some connected, some in accordance with one process, some another. There are multitudinous ways of doing it, and, strange to say, each way is the best.

Then see the smug complacency of the performers when the work is done and the victory crowned by an apostle of progress uttering the solemn and final dictum,—"Whoso putteth a soil-pipe inside, henceforth and for ever let him stand condemned."

But is it in direct attack, merely, that this new host excels? Oh, no! The dexterity with which a change of front can be effected is, if possible, more marvellous still; and if anything were needed to convince the "old ones" that their day is gone by, it is this extraordinary facility, this versatility, of their self-constituted successors, this new exemplification of the old saying, "Unstable as water, thou shalt excel."

A fresh order goes forth, this time given in stentorian tones by the inexorable "Jack Frost,"—"Soil-pipes inside!" And if, Mr. Editor, you were astonished before, now, I think, you must fairly own that even "Herod is out-Heroded." In a trice all is over. The new enemy is quickly vanquished; back go the soil-pipes. And then, in the gloaming, how pleasant to listen to the incidents of the day as these warriors gather round the camp-fires. Hear this stalwart one recounting his mighty deeds. His is indeed a glorious record; truly he smote them hip and thigh. How many, think you, fell to his own individual prowess? In sober truth, no less than fifty and three, not counting the wounded yet to be brought in.

Indeed, sir, the old motto, *festina lente*, under which we used to march, is no longer a rallying cry.

R. J. LEESON.

MAGNETIC PREMONITIONS, 1881.

SIR,—The recent landslips in the Isle of Wight and other places appear to indicate the progress of an undulatory movement in a north-westerly direction, extending gradually from latitude 46° N., and longitude 15° E, towards latitude 60° N. and 20° W.

Evidences exist upon the surface of the earth generally, that many different geological changes have taken place at various periods, and not confined to any particular area or locality; but one great consolation derived from experience assuredly indicates that the operation only extends over a relatively limited area at the same time.

We may not have any premonitions, the actual results of systematic observations, derived from special instruments, and former records of the direction and number of undulations, or the velocity and intensity; but some rather curious coincidences are open to identification, probably connected with special geological changes, and, like the use of the barometer, give a general approximation of the weather expected to follow, under the conditions and the consistent deductions.

It is suggested that a very remarkable coincidence may be expected about this period, as the amount of the magnetic variation is now nearly 18° W., or identical with the position during the Great Earthquake of Lisbon, 1755. The development may be exerted upon a different locality, and only extend over a limited area; but it will meet the interests of science if the anticipations are confirmed during the present year, of the effects or influence of magnetic variation, applicable as an index, and establish the presumed connexion with undulatory movements upon the surface of the earth. ARTHUR GEARING.

Stable Fittings.—We have before us the "Illustrated Catalogue of Stable Fittings and Cow Fittings," issued by J. Arthur Young & Co., of Victoria-street, and we recommend it as useful. The designs and arrangements all seem good, and valuable information accompanies the illustrations. It serves as a price-book also.

CHURCH-BUILDING NEWS.

Flax Bourton, near Bristol.—The parish church of Flax Bourton, formerly a chapelry attached to Nailsea, has just been re-opened, after considerable reparation, as well as the addition of a north aisle, organ-chamber, and vestry. The church is a plain specimen of the fifteenth century, with a west tower, but contains the south doorway (with a relief, apparently of St. Michael, over it) and the chancel arch, both belonging to the original Norman church. They are very rich and beautiful specimens of the later Norman, and have been carefully cleaned of whitewash, &c. The huge west gallery has been pulled down, the tower arch opened out, and the belfry ceiling renewed. The nave and chancel roofs and ceilings were both in a bad state, and have been extensively repaired, boarding taking the place of lath and plaster to the former; while to the latter, by the removal of the lath and plaster, a handsome though decayed panelled oak ceiling was found and restored. The porch roof is of oak, and new, with its design founded on that of the rotten old one as far as could be traced. The church has been re-seated with open deal stained benches (except to the chancel, where there are English oak stalls). The pavement to the chancel is of encaustic tiles, and the holy-table is a rich one of English oak. The walls internally have been re-plastered, and the windows re-glazed with cathedral and white glass intermixed. The new pulpit is of oak, on a bath stone base. The warming apparatus is by Mr. Porritt, of Bolton. Painted glass, representing the Ascension, has been inserted in the east window, Messrs. Lavers, Barraud, & Westlake being the artists. The builders were Messrs. F. Merrick & Son, Glastonbury; the architect was Mr. Edmund B. Ferrey. The cost has been upwards of 1,000*l.*

North Wingfield, Derbyshire.—The restoration of this church is now completed. The church is of good proportions, and has a lofty tower. It stands on elevated ground, commanding all the Clay-cross district. The ancient Norman family of the Deincourts were owners of and great benefactors to the fabric, as also the Savage family in the fifteenth century. The chancel and the shell of the nave are of Decorated date, with aisles, tower, and clearstories of later work. On the north side of the chancel is the lady-chapel, of Late Thirteenth-century date, with fine though mutilated sculptures representing the Annunciation and the Coronation of the Blessed Virgin. There is another interesting sculpture in the south aisle, formerly the chapel of St. Lawrence, representing the martyrdom of that saint. There is an external recessed and canopied tomb, and the remains of another inside the chancel were discovered sufficient to enable it to be restored. The ancient Deincourt effigy has been relaid in it, from the outside, where it had been placed over the remains of the original figure. The arcade foundations were found to be in a most dangerous state; they have had to be replaced by new brickwork, needling and shoring up the pillars. New roofs of oak have been placed on the north transept and on the lady-chapel, and the whole church has been reseated in oak, and the floors relaid. The contractor for the works was Mr. Rollinson, of Chesterfield, and the architects were Mr. R. Herbert Carpenter and Mr. B. Ingelow, of London.

Miscellanea.

The Coming Building Exhibition.—We have received a "first list," containing the names of many well-known firms who have secured space in the Second Building Exhibition, to be held in the Agricultural Hall, Islington, early in April, and we learn that over 35,000 square feet of space have been already allotted. The prospects of the Exhibition would, therefore, seem to be good, and those who have not yet secured space will do well to apply at once.

Books.—We would direct the attention of our readers to the lists of important works, on scientific subjects and the useful arts, advertised by Messrs. Longmans & Co. in our present number and that of last week. The Text Books of Science, edited by C. W. Merrifield, may be specially recommended to our student-readers, and the last edition of Gwilt's "Encyclopædia of Architecture" is an absolutely indispensable book.

The Peabody Buildings.—In their sixteenth annual report, the trustees of the Peabody Donation Fund state that the net gain of the year, from rents and interest, has been 25,276*l.* 11s. 8d., and on land sold at Chelsea, 1,503*l.* 6s., making in the whole 26,779*l.* 17s. 8d., as shown by the annexed accounts. The sum given and bequeathed by Mr. Peabody was, in 1862, 150,000*l.*; in 1866, 100,000*l.*; in 1868, 100,000*l.*; and in 1873, 150,000*l.*; making a total of 500,000*l.*; to which has been added money received for rent and interest, 250,697*l.* 3s., making the total fund on the 31st of December last 750,697*l.* 3s. Of this amount there was spent to the end of 1880 the sum of 594,197*l.* 10s. 4d., thus leaving in the hands of the trustees at that time 156,499*l.* 12s. 8d. The trustees have, up to the present time, provided for the artisan and labouring poor of London 5,170 rooms, exclusive of bath-rooms, laundries, and washhouses. These rooms comprise 2,355 separate dwellings, which are occupied by 9,899 individuals. Of the six plots of land purchased from the Metropolitan Board of Works, referred to in last year's report, the trustees have to state as follows:—Glasshouse-street.—Possession of this site was acquired on the 4th of March last, and ten blocks of buildings, containing 630 rooms, are nearly completed, and will be opened in the spring. Bedfordbury.—The greater part of this site was made over to the trustees on the 26th of May last, and four blocks, containing 280 rooms, were at once commenced. These, it is hoped, will be ready for occupation at the end of the summer. The remainder of this site did not become available until the 22nd of November. On this part a building, to contain 84 rooms, will soon be commenced. Great Wild-street.—Possession of this site was obtained on the 7th of July, and soon afterwards thirteen buildings, to contain 819 rooms, were commenced. These will probably be finished during the present year. Whitecross-street.—Only two small parts of this site are in possession of the trustees, and as yet no buildings have been commenced, the area being too small to build upon with advantage. Old Pye-street and Pear Tree-court.—These sites are not yet in the hands of the trustees. The trustees hope that before the close of the present year they will have provided additional accommodation for 760 families, or upwards of 3,500 individuals. The death-rate in the Peabody Buildings during the past year was 19·71 per 1,000, which is about 2·49 in a thousand below the average of all London for the same period. The average weekly earnings of the head of each family in residence at the end of the year was 1*l.* 3s. 4½d. The average rent of each dwelling was 4s. 4½d. per week, and of each room, 1s. 11½d. The rents in all cases include the free use of water, laundries, scullerries, and bath-rooms.

The Paris Exhibition Building.—The buildings in the Champs de Mars are rapidly disappearing, and it is now certain the ground can be given back to the Ministry of War at the time fixed on. The State will still make a good thing of the colossal superstructure in iron. The pavilion of the Ville de Paris is to be re-erected in the Champs Élysées. Hamburg has bought one of the angle domes to serve for an exhibition the town proposes opening soon. A gigantic manufactory at St. Denis is going to utilise the machinery annexe. The great dome opposite the Pont d'Jéna has been bought by the manager of one of the principal whale-fishery stations. Lastly, the transverse galleries are on the point of being obtained for a projected exhibition for the town of Amsterdam. Thus, the Great Exhibition of 1878 will still survive in Europe, and forward the cause of progress and of peace.

Wood Carving.—A paper on "The Present Condition of the Art of Wood Carving in England," by Mr. J. Hungerford Pollen, was read at the Society of Arts on the 9th inst., and, together with a report of the discussion which followed, will be found in full in *The Journal* of the Society of Feb. 11th. We must regard as a singular oversight the omission during the evening of any proper reference to the remarkable collection of ancient and modern wood-carving exhibited last year at the Royal Albert Hall.

A Good Berth.—The Town Council of Godmanchester recently advertised for a gentleman to take the offices of surveyor and inspector, the duties to extend to the management of the water, fire-engine, &c., the salary 52*l.* per annum. There were thirteen applicants for the berth.

Royal Institution of Cornwall.—At the monthly meeting of the members of this Institution Mr. H. Mitchell Whitley made a communication with reference to the recession of the tide in the valley of the Fal. It is traditionally stated that the tide once flowed up beyond Tregony, to Hayle Boat Rock, below Creed Church. Taking first the case of Tregony, Leland states, writing about 1520, that the main stream of the Fal "goeth up ebbing and flowing, and a quarter of a mile above is the town of Tregony," and again, "Tregony is the olde ful se marke." Hale, 1685-1736, says "the sea ebbed and flowed above Tregony Bridge and St. James's Chapel, as the shells and sand there still to be seen and tradition inform us"; and Whitaker, in his "Cathedral of Cornwall," gives an account of the former prosperity of the town. Referring then to a copy of a chart, drawn by Henry VIII., in the British Museum, the Fal is shown flowing up a little above Tregony, and no bridge then existed; this chart was drawn between 1509 and 1535, but the materials were probably gathered some years before this date. On this chart the parish church of St. James, Tregony, is shown "standing in a more," as Leland describes it, with a spire at the western end; as many churches which have been rebuilt in the Perpendicular period, and now have towers, are represented with spires. It was suggested that this map shows the churches before the general rebuilding which took place in the fifteenth and sixteenth centuries. Another chart drawn about the year 1670 was then referred to, which shows the tide flowing up to Tregony Bridge, and the bridge itself, indicating it was built between the dates of the two charts. From these facts, the deduction was drawn that there is clear evidence that the tide, in historic times, reached Tregony.

Dangerous Baths.—An inquiry was held on Saturday at the Royal Oak Hotel, Oakfield-road, Penge, as to the death of Mr. Charles Frederick Deacon, 30, of 1, Minden-villa, Anerley-road, Anerley. It appeared from the evidence that the deceased was a solicitor. On Monday evening last, about half-past 11 o'clock, he went to the bath-room for the purpose of having a warm bath. The water was heated by an atmospheric burner. At one o'clock in the morning his wife was alarmed to find that he had not returned to their room. The door was forced, and Mr. Deacon was found leaning against the wall dead. Mr. J. Sidney Turner, surgeon, of Stanton House, Thicket-road, Upper Norwood, said he had made a *post mortem* examination of the body of the deceased. The brain, the ventricles of the heart, and all the internal organs were healthy. The appearance of the intestines and the organs led him to the conclusion that death had resulted from inhaling carbonic acid gas and carbonic oxide. The atmospheric burners used for heating the water of baths similarly constructed to the one used by the deceased were extremely dangerous. They threw off a considerable quantity of poisonous fumes. There was no ventilation in the bath-room at the time Mr. Deacon met his death. Carbonic acid gas and carbonic oxide did not kill by suffocation, but by direct poison. The effect upon the brain was very similar to the inhalation of chloroform. He had no reason to suspect that the deceased had committed suicide. During the last fortnight the witness had attended six persons who were similarly attacked after using a similar bath. The jury returned a verdict that Mr. Deacon died from inhaling carbonic acid gas and carbonic oxide.

Literary Amenities.—Mr. J. O. Halliwell-Phillipps, the well-known Shakspearean critic and writer, justly protests in a published letter addressed to Mr. Robt. Browning, president of the "New Shakspere Society," against some coarse and impertinent language used in a Preface to a Facsimile edition of "Hamlet" in reference to a work of his on that tragedy. In this Preface, which is described as written by the "Founder and Director" of that society, Mr. Phillipps is described as a "leading member of the firm of Pigsbrook & Co."; some of his observations are denounced as "porcine vagaries," and others as being promulgated "on the prongs of a dung-fork." "Not being versed in the phraseology of Billingsgate," as Mr. Phillipps observes, we are at a loss to understand the application of the words; but we quite agree with him that they cannot belong to the language accepted by gentlemen in literary or any other controversy. It seems to us that every one who controls a press is bound to protest against the adoption of such a style.

Phœnician Antiquities in Malta.—Dr. von Dorent, a well-known Austrian archæologist, who has paid several visits to Malta, writes on this subject in the *Allgemeine Zeitung* of Augsburg. The antiquities found in Malta are collected in the Rohan Library at Valetta. They consist of a few Egyptian sarcophagi,—too few and too rude to let it be supposed that the Egyptians made any prolonged stay in the island,—some Roman sculptures, and, above all, a Phœnician candelabrum, some Phœnician inscriptions, and seven statuettes of Phœnician divinities. These statuettes are made of the yellow limestone of which the island is formed; they are headless, but with holes for the insertion of the heads, which, being probably of a softer material, were broken and lost on the ruin of the temple of Hadjar Kim, to which they belonged. These are, according to Dr. von Lorent, the only works of art of the Phœnician period which have come down to us. All archæologists are agreed that the statuettes represent the Cabiri, those somewhat mysterious divinities mentioned by Herodotus, which were worshipped in Egypt, Asia Minor, and Greece, and whose supposed nature and significance no inquiry has yet been able to exactly ascertain. There is also in the collection a Phœnician altar, likewise found in Hadjar Kim, 2 ft. 6 in. high and 1 ft. 6 in. broad, with a pilaster at every corner. In the midst of the stone there is a rough carving of a palm-tree. The ruins of the temple of Hadjar Kim are still to be seen at a distance of a four hours' ride from Valetta, and near it the equally interesting remains of the other Phœnician temple of El Mnaidra. In different parts of the island there are whole houses built of great blocks of stone, on sites where excavation would no doubt lead to interesting results; only, says Dr. Lorent, "the Maltese have no money for such undertakings, and to the English the island is more important as a fortress than for any archæological treasures it may contain." It is a pity that some competent English archæologist, Professor Sayce for instance, or Mr. Boscawen, does not visit Malta, and see for himself whether there really is anything more to be discovered.

Messrs. Chubb & Son, lock and safe makers to the Queen and to the Bank of England, have just issued a new illustrated priced catalogue. It consists of 28 pages; contains nearly 150 illustrations; the prices of 700 different articles, and no fewer than 1,100 dimensions of locks, safes, &c. It is stated that nearly one million of the patent detector locks have been made and sold.

"An Architect's Fire Grate."—Under this title Messrs. Patteson, of Manchester, are manufacturing from the design of Mr. Geo. Truefitt, architect, a cheap and simple grate which is found to answer well. It is built entirely of fire-bricks of the ordinary size, except in respect of four of them, into which the bars slide; these are specially moulded.

TENDERS

For the erection of a laundry at the Deaf and Dumb Asylum at Margate. Messrs. I'Anson & Son, architects:—

Elgar, Ramsgate	£1,918	16	6
Edwards, Margate	1,794	11	6
Denne, Deal	1,631	0	0
Rolfe, Margate	1,598	0	0
Adcock, Dover	1,560	0	0
Shrubsole, Faversham	1,524	0	0
Paramor & Son, Margate	1,510	0	9

For reconstruction of premises for Messrs. Bramston Gotto, York-road, King's-cross. Quantities supplied. Mr. J. H. Money, architect:—

Gann	£610	0	0
Lister, Bros.	595	0	0
Austin	575	0	0
Keen	575	0	0
Coulter	494	0	0
Wilson & Exton	447	0	0
Ward & Lamble	443	0	0
Spencer & Co. (accepted)	420	0	0

For additions to Beacon Bank, Penrith. Messrs. Hetherington & Oliver, architects:—

Builder, Joiner, and Slater's Work.

Richardson	£574	0	0
Griseathwaite, Penrith (accepted)	573	6	1

Plasterer, Painter, Glazier, Plumber, and Gas Fitter's Work.

Porter & Dixon, Penrith (accepted)	£136	0	0

For the erection of public urinals at the rear of the Kensington Vestry-hall, for the Vestry. Mr. Wm. Weaver, C.E., surveyor:—

Mears	£530	0	0
Wilkins	489	0	0
Cowland, Bros.	482	0	0
Colley	465	0	0
Hockly	439	0	0
Braid & Co. (accepted)	415	0	0

For new roads and sewers for the British Land Company, Limited, on their estate at Ealing. Mr. H. B Michell, surveyor:—

Acock	£2,476	0	0
Crockett	2,438	0	0
Bloomfield	2,350	0	0
Thompson & Son	2,315	0	0
Wilson	2,300	0	0
Killingback	2,300	0	0
Peill	2,295	0	0
Dunmore	2,268	0	
McKenzie & Co.	2,240	0	
Keeble	2,235	0	0
Jackson	2,222	0	0
Harris	2,219	0	0
Pizzey	2,187	0	0

For new roads and sewers for the British Land Company on their estate at Wandsworth Common. Mr. H. B. Michell, surveyor:—

Killingback	£2,200	0	0
Crockett	2,138	0	0
Acock	2,027	0	0
Keeble	1,985	0	0
Dunmore	1,900	0	0
Pizzey	1,850	0	0
Harris	1,846	0	0
McKenzie & Co.	1,820	0	0
Jackson	1,650	0	0
Bloomfield	1,600	0	0
Peill	1,595	0	0
Thompson & Son	1,590	0	0
Wilson	1,500	0	0

For new road and surface water-drain for the British Land Company, on their estate at Barking. Mr. H. B. Michell, surveyor:—

Crockett	£525	0	0
Acock	495	0	0
Keeble	490	0	0
Killingback	485	0	0
McKenzie & Co.	475	0	0
Dunmore	430	0	0
Thompson & Son	400	0	0
Harris	398	0	0
Bloomfield	395	0	0
Pizzey	385	0	0
Wilson	350	0	0
Peill	340	0	0
Jackson	332	0	0

For the construction of an intercepting sewer, with manholes, lampholes, &c., in Ashton's Field-street, Walkden, for the Barton Rural Sanitary Authority. Quantities supplied by the engineer, Mr. J. Price, C.E.:—

Snape & Sons, Eccles	£287	11	0
Harrison, Salford	264	9	2
Taylor & Duckworth, Denton	196	14	0
Claridge, Walkden	191	4	0
Williams, Chester	188	9	0
Noden, Swinton	185	0	0
Unsworth, Walkden	181	2	0
Davis & Holt, Bolton	167	11	0
Turner & Sons, Warrington	156	8	0
Jackson, Walkden (accepted)	149	8	8

For the erection of relief offices and dispensary, in the Fairfield-road, Bow. Messrs. Hills & Fletcher, architects:—

Crisp & Tomlin (accepted)	£900	0	0

For works of water supply, including storage reservoir, collecting and filtering adits, and upwards of eighty miles of main and distributing supply pipes from 2 in. to 8 in. bore, for Carnoustie. Mr. A. M'Culloch, C.E.:—

Mackay,* Broughty Ferry	£5,077	19	7

* Accepted for the whole of the five contracts.

For the plant, machinery, and various brewery utensils for the new brewery, Portslade, near Brighton, for Messrs. J. Dudney & Sons. Messrs. Scamell & Colyer, engineers:—

Contract No. 3.—Boilers.

Appleby, Bros., Greenwich			
Cater, Walker, Sons, & Co., London	£1,685	0	0
Horton & Son, London	893	0	0
Thornewill & Warham, Burton and London	886	0	0

Contract No. 4.—Millwright's Work.

Hunter & English, London	£3,874	0	0
Pontifex & Sons, London	2,995	0	0
Bennett, London	2,924	10	0
Thornewill & Warham, Burton and London	2,723	0	0
Oxley & Co., Frome	2,560	10	0
Pontifex & Wood, London	2,510	0	0
Woods & Co., Manchester	2,500	0	0
Wilson & Co. London	2,473	9	10

Contract No. 5.—Coppers, Underbacks, Coils, &c.

Shears, London	£1,139	0	0
Blundell, Bros., London	1,081	4	0
Pontifex & Sons, London	1,016	0	0
Bennett, London	985	0	0
Dale & Co., London	960	1	6
Pontifex & Wood, London	825	0	0
Bindley & Briggs, Burton-on-Trent, (accepted)	817	0	0

Contract No. 6.—Slate Tuns, Yeast Backs, &c.

Sharp & Sons, London	£1,166	0	0
Brindley, London	1,035	0	0
Braby & Co., London	985	0	0
Stirling, London	908	0	0
Ashton & Green (accepted)	658	0	0

Contract No. 7.—Copper and Iron Pipe Connexions, Attemperators, &c.

Shears, London	£2,440	0	0
Dale & Co., London	2,314	0	0
Siebe & Gorman, London	1,959	0	0
Oxley & Co., Frome	1,836	9	0
Blundell, Bros., London	1,700	0	0
Wilson & Co., Frome	1,606	18	7
Pontifex & Sons, London	1,580	0	0
Bennett, London	1,520	0	0
Thornewill & Warham, Burton and London	1,450	0	0
Bindley & Briggs, Burton-on-Trent, (accepted)	1,435	0	0

Contract No. 9.—Refrigerators.

Lawrence & Co., London	385	0	0

For the construction of roads and sewers on an estate at Knight's Hill, Lower Norwood, for Messrs. Blake & Snow. Mr. J. T. Bressey, surveyor:—

Botterill	£7,990	0	0 !
Woodham	6,650	0	0
Bell	6,390	0	0
Blackmore & Bath	5,980	10	0
Marshall	5,962	0	0
Carter	5,600	0	0
Jesse Jackson	5,555	0	0
Dyer	5,535	0	0
Nowell & Robson	5,315	0	0
King	5,300	0	0
Coker	5,234	0	0
Longridge	5,100	0	0
J. Jackson	5,036	0	0
Mathews	5,000	0	0
Peill & Sons	5,000	0	0
Mowlem & Co.	4,872	0	0
Rigby	4,859	0	0
Thompson & Son	4,850	0	0
Iles	4,848	0	0
Harris	4,615	0	0
Acock	4,500	0	0
Rendell	4,450	0	0
Cook & Co.	4,450	0	0
Batch	4,399	0	0
Mayo	4,381	15	0
Mackenzie & Co.	4,340	0	0
Knight	4,294	0	0
Brooker	4,100	10	0
Smith & Co.	3,625	0	0 !

For Dorchester Museum and School of Art, &c. Mr. G. R. Crickmay, architect. Quantities by Messrs. Nixon & Raven:—

Davis & Son	£4,930	0	0
Innes	4,930	0	0
Church	4,830	0	0
Crook	4,816	0	0
Clark	4,778	0	0
Stephens & Bastow	4,418	0	0
Hatherly	4,417	0	0
Tilley	4,064	0	0
Wellspring	4,058	0	0
Bull & Sons	3,950	0	0
George	3,935	0	0
Gregory	3,858	0	0
Guy (accepted)	3,743	6	0
Huey	3,699	0	0

For Army and Navy Auxiliary Stores, Francis-street, Westminster. Mr. J. Knowles, architect. Quantities by Messrs. Strudwick & Mennie:—

Martin, Wells, & Co.	£47,700	0	0
Webster	44,900	0	0
Higgs & Hill	44,640	0	0
Colls & Sons	44,444	0	0
Bull & Cooper	43,493	0	0
Price & Richardson	43,399	0	0
Stevens & Bastow	42,999	0	0
Ashby, Bros.	42,788	0	0
Kirk & Randall	42,554	0	0
Nightingale	42,470	0	0
Clark & Bracey	40,490	0	0
Shaw	40,370	0	0
McLachlan & Sons	39,793	0	0
Lawrence	39,510	0	0

For a detached villa in Bentcliffe Park, Eccles, for Mr. Charles Rawson. Mr. T. Hartas, architect. Quantities by Mr. T. H. Stone:—

Burnell	£722	0	0
Harrison, Greenheys	711	0	0
Napier	710	0	0
Hibbert, Greenheys	660	0	0
Brooks & Son, Patricroft	645	0	0
Wilson, Toft, & Huntly	638	0	0
McFarlane	627	0	0
Daniels, Pendleton	627	0	0
Smith & Goodwin	624	0	0
Fletcher	615	0	0
Maben & Fairnington	612	0	0
Shaw (accepted)	598	0	0

For black-board, model throne, desks, presses, and other fittings in the new School of Art, Bedford Park, Chiswick. Mr. Maurice B. Adams, architect:—

	Yellow Deal.		
Holland & Son, Mount-street	£145	0	0
Lascelles, Bunhill-row	111	3	0

	Yellow Deal or Pitch Pine.		
Robertson & Son, Alnwick*	117	5	0

*Pitch pine accepted, and the order increased to 145*l.* 6*s.*

For the erection of Board schools, Gateshead-on-Tyne, to accommodate 707 children, including care-taker's house, boundary-walls, covered play-sheds, cementing playgrounds &c. Messrs. Oliver & Leeson, architects. Quantities supplied:—

Ferguson	£5,359	0	0
Mitchison & Co.	5,159	0	0
Loraine	5,148	0	0
Westgarth	4,981	0	0
Nicholson	4,648	0	0
Lowry	4,540	0	0
Broomhead & Keswick	4,479	0	0
Allison	4,435	0	0
Elliot	4,337	0	0
Smith	4,310	0	0
Wilkinson & Westgarth	4,286	0	0
Fortune	4,278	0	0
Grisdale	4,266	0	0
Johnson	4,250	0	0
Lamb	4,220	0	0
Lister & Co.	4,218	0	0
Bell	4,197	0	0
Pickhaver	4,161	0	0
W. C. Atkinson	4,156	0	0
Reed	4,150	0	0
H. Atkinson	3,987	0	0
Greason & Stockdale	3,925	0	0
Atkinson & Son	3,902	0	0
Rippon	3,898	0	0
Miller	3,740	0	0
Thompson	3,728	0	0
Robson & Son	3,700	0	0
King	3,695	0	0
Haswell & Waugh	3,691	0	0

For alterations to the Park Tavern, Battersea, for Mr. Batchelor. Mr. W. Davies, architect:—

Palmer	£350	0	0
Holloway	294	0	0
Lathey, Bros.	253	0	0
Lewis (accepted)	225	0	0

TO CORRESPONDENTS.

A. F. H.—A. J. H.—V. H.—J. H.—J. T. B.—D. & M.—G. F. S.—F. I.—A G—C. C. & Co.—W. D.—C. & M.—H. & R. P.—D. W.—A. C. D R.—H. B. M.—H. & F.—J. P.—J. H. M.—J. D.—M. & Sons.—G. E (next week)—M. & L—S. & C.—G. M—W. H. C.—J. S—W. W.—W. & L.—H. R.—E. W. W.—W. L.—J. L—W. S.—H C. B.—T. W. R.—S. W—Messrs. L—J. N.—J. S. H.—F. G. H—H. W.—J. S.—J. D.—M. B. A—B. H. T.—F. W. S. (we cannot attempt to supply correspondents with valuations).—J. K. C. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

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The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts.—[ADVT.]

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SUMMER DRIED,
STOKE GROUND, and
CORSHAM DOWN,
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